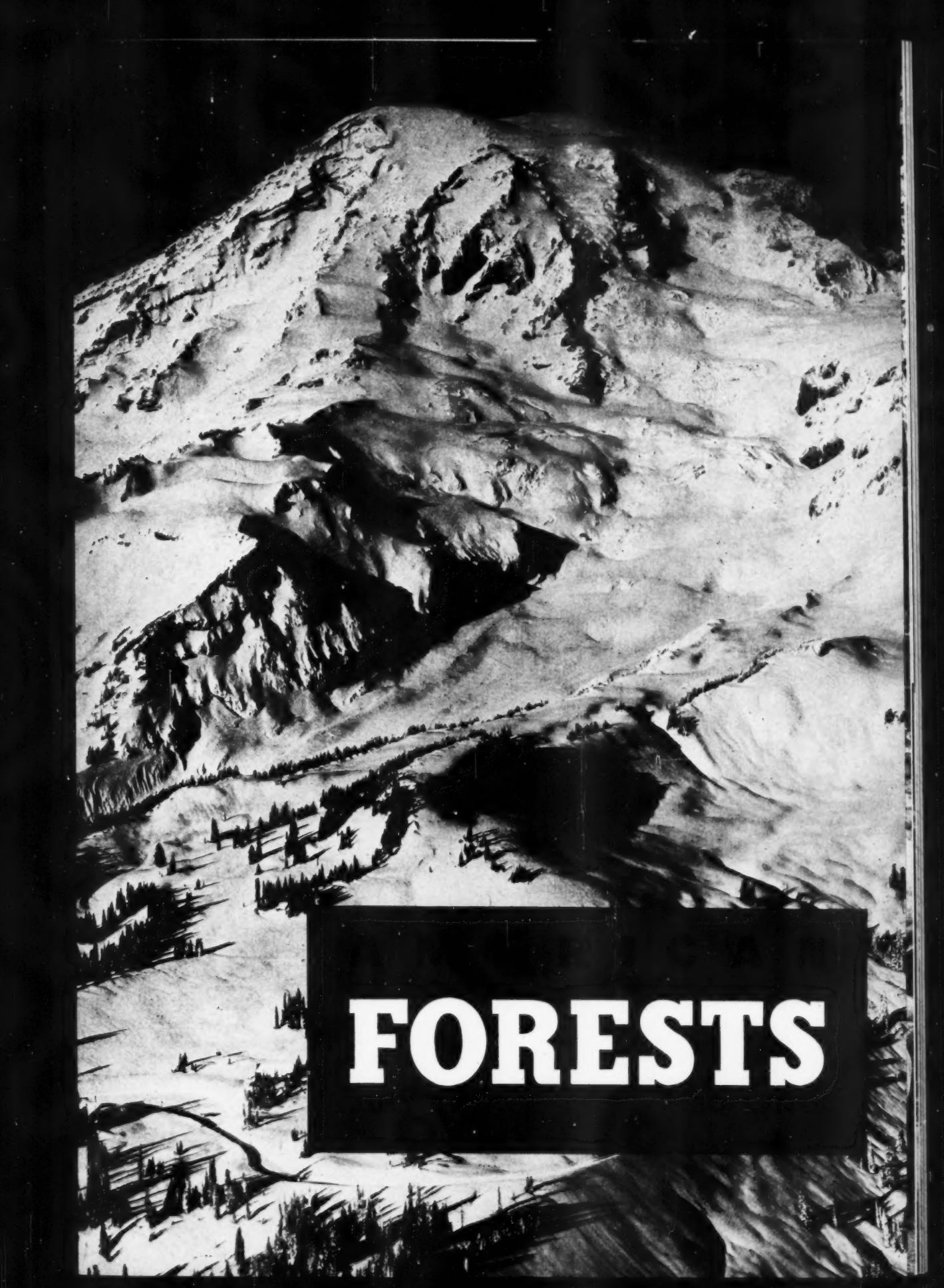
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AMERICAN FORESTS

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"White Majesty"—The Summit of Mt. Rainier
Official U. S. Navy Photograph

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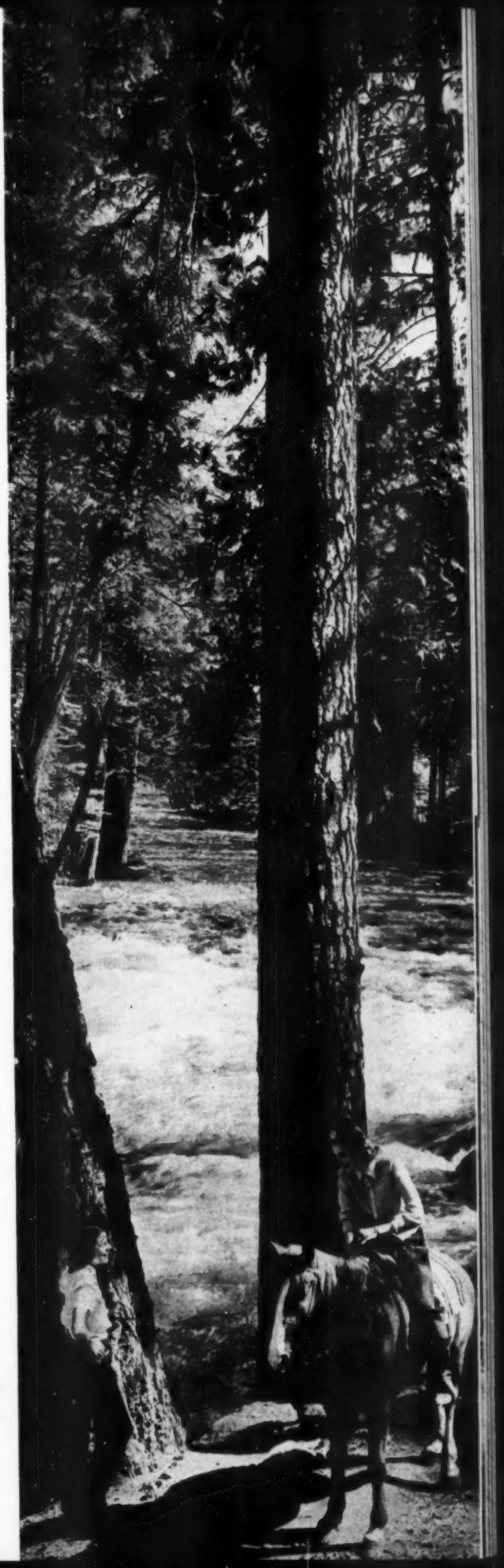

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The Purpose

The American Forestry Association is a national organization—educational in character—for the advancement of the intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is (1) to bring about adequate protection and perpetuation of these resources by creating an enlightened public appreciation of the need of conserving them through wise use for the present and future welfare and enjoyment of all the people; (2) to make available to Americans in all walks of life a wider knowledge and appreciation of their forest resources and the part they can play in the social and industrial life of our nation.

The History MORE THAN half a century ago American men and women of vision, stirred by the rapid destruction of forests and forest life in the United States, began to raise their voices in behalf of conservation. Foreseeing the danger of allowing America's rich forests and vast natural wealth to be thoughtlessly wasted, these public-spirited individuals protested the needless destruction that was taking place. Out of their efforts came a collective force—The American Forestry Association, first organized in 1875 and made a national influence in 1882.

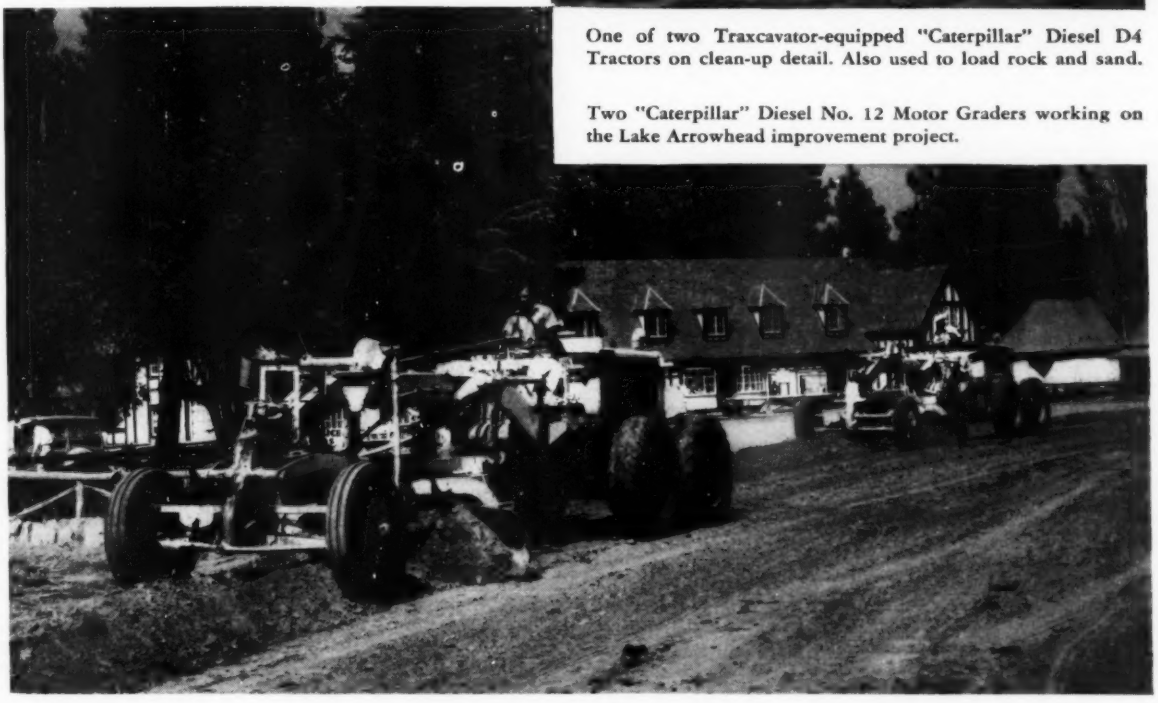
The Record THUS The American Forestry Association has a long record of efficient public service. The establishment of the United States Forest Service and the creation of the nationwide system of state and national forests and parks were due in no small part to the Association's efforts. Its educational work, extending over more than seventy years, has stimulated public action and built public support for protection against forest fires and floods; for prevention and control of soil erosion; for the development of conservation policies in forest management for continuous production through wise use; for the control of forest insects and diseases and the preservation of fish and wildlife.

The Support FROM AN ORGANIZATION of a few hundred members three decades ago, the Association has attained a substantial membership of many thousand men and women, living in every state in the Union and in foreign countries throughout the world. The funds of the Association are administered by a Board of Directors composed of individuals of national standing—men and women who give their services free, who have a practical understanding of the nation's present-day conservation needs, and are equipped through experience, ability, enthusiasm and training to advance the Association's program.

The Program BECAUSE OF its independent, non-political character, the work of The American Forestry Association is vitally necessary in the field of public service. It provides an unprejudiced influence for the development of sound conservation measures. It helps coordinate public, state and federal policies. It cooperates closely with federal, state and private agencies in conservation work. At the same time it initiates, sponsors and carries on needed projects in conservation in addition to its regular broad continuous program of education.

Picture-village gets a "facial"

One of two Traxcavator-equipped "Caterpillar" Diesel D4 Tractors on clean-up detail. Also used to load rock and sand.



Two "Caterpillar" Diesel No. 12 Motor Graders working on the Lake Arrowhead improvement project.

It's often amazing what a good cleaning-and-touch-up can do for a community. It attracts new residents, stimulates business, increases property values. Famous Lake Arrowhead is going at it to the tune of several million dollars.

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International Conservation Bridge

SIR: I am pleased to know that the decision of our Parliament to set apart the week of April 10 as a National Wildlife Week, in recognition of Jack Miner's interest in the preservation of wild life, has met so strongly with your approval.

The importance of this measure, as a means of furthering conservation on the North American continent, will, I am sure, become increasingly apparent as the years go by.—*W. L. MacKenzie King*, Prime Minister, Canada.

SIR: As Jack Miner was born in Ohio, naturally the United States deserves much of the credit of the fame that came to his name.

I have been thinking that it would be fitting if the United States also would adopt the week of April 10 as its Wildlife Week. This would be most suitable for both southern and northern states, and now being Canada's official Wildlife Week, all America would thus pay tribute to the fame and name of the celebrated American boy, born in Ohio and later living in Canada, and during that week there would be a unanimous all-American promotion of the value of wildlife conservation.—*John R. MacNicol*, House of Commons, Ottawa, Ontario, Canada.

SIR: I would like to express to you how much I, a member of the British Colonial Forest Service, appreciate the style and friendship exemplified by the articles published in your magazine. In both your articles and editorials you go far beyond the confines of your own land and you explain to your readers the problems, difficulties and methods found in the United Kingdom and in Europe. This stresses the very real international brotherhood there is, and must be, among foresters. I particularly admire your adult approach to foreign achievements. Unlike so many magazines which are doubtless directed at more immature and less well educated minds; your journal realizes that the United States is too big and has to her credit too many great achievements to be harmed by praise of some foreign effort.—*Colin Marshall*, Conservator of Forests, Fiji.

Hayfever Sufferers Please Note

SIR: I have been interested in trees for many years, since some of them are a source of pollen which produces allergic symptoms.

Naturally, I was forced to learn something about detecting the various kinds of trees. I have had access to a number of books, most of which were incomplete in one way or another. Then I finally joined The American Forestry Association, thinking that the book which was advertised might be more complete than the others I had consulted. I was quite delighted when I received it, because it greatly exceeded my expectations. In a comparatively few pages, this book includes everything necessary for me to identify trees. It is most complete.

I would like to recommend the Association to a number of men in this country who have a certain interest in trees from a medical standpoint.—*Orval R. Withers*, M.D., Kansas City, Missouri.

Fun, but Not Easy

SIR: In the June number I was pleased to find two articles of concrete value to me: "Farm Forestry is Fun," by Morgan Monroe, and John M. Richardson's article under "Managing Your Woodlands."

For a beginner, like myself, the interesting items were such as: how to select; what sizes to cut; thinning out suppressed trees; the need for every tree to have top light (an important guide to cutting) and, the actual demand for hardwoods such as mine.

Naturally, these authors find buyers. In my tract I find, after consulting two large operators and a state forester who came by request in reply to my inquiry to you, that I must cut myself, get some farmer to snake the logs out by horse in winter when the horses are "eating their heads off" and try to sell at roadside. Another expert friend suggests a portable sawmill, but he did not advise where to get the money to buy one.

I cannot cut and drag logs with my two bare hands. To get started I must find someone to buy on the stump, who will also cut selectively, taking off crops of only "ripe" trees. I plan, however, to start next winter by myself.

Thank you so much for your help in suggesting sources of advice. The message went through a series of offices, winding up with the local forester who advised kindly and gently that whatever I do, I must do myself, plus a farmer and a horse. Maybe someone will write an article for you sometime which will show the less rosy aspects of getting a start.—*James Loder Park*, Manager, Wake Robin Farm, Home, Pennsylvania.

Accent on Youth

SIR: It has come into my heart recently more and more to try to interest young boys and girls, like the scout organizations, in the beauty and wonder of forestry, and to figure out ways in which they might be made to realize the great value and joy that would come into their lives if they knew more about trees.

Your story in the September number about the Hoffman family ("A Family Discovers Forestry") has been a fascinating record and picture of what I would like to see duplicated many times in America. I believe there are many such places where a similar project is possible, but the big thing is to find a man with the vision and courage of H. Lee Hoffman who is willing to try it.—*George M. Bassett*, Kenmore, New York.

Paste on Your Matchbox

SIR: Tip to campers: "Most Forest Fires Start from *Scratch!*" — *G. E. Hora*, Chicago, Illinois.

The new dining car has angle seating for extra room.

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1:57 pm	Ar. Three Forks (*Yellowstone*)	Lv.	10:28 am
3:48 pm	Ar. . . Butte . .	Lv.	8:38 am
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Summer Pastoral . . .

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Editorial

Gambling With a Great Resource

IN AN editorial, "Forestry in the New Congress," published in the January AMERICAN FORESTS, attention was called to the danger that the new Congress, then about to convene and committed to cutting federal appropriations, would fail to distinguish between activities essential to the protection and conservation of the nation's forests and those which could be dispensed with or restricted. We expressed accord with congressional action to curtail federal spending and stated our view that economies in federal forestry should be accomplished by reducing funds for less essential activities and by coordinating work between bureaus and with the states.

The record of the 80th Congress in laying the yardstick of economy on the nation's most important natural resource was written by the House of Representatives on May 28 when it passed H. R. 3601, providing appropriations for the Department of Agriculture. In some respects the record is highly commendable; in others it fails glaringly to recognize activities essential to long-range management and development of the forest resource. For example, the total cut from the budget estimate for Forest Service activities next fiscal year is $11,832,109, or $15,150,783 below the 1947 figure. To effect this reduction the House pruned a number of activities clearly essential while providing funds for some less essential. Notable among the latter is $5,300,000 for building national forest highways for cross-country travel.

To its credit, the House gave full recognition to the Budget Bureau's recommendation of funds for the protection of forests from fire and for providing urgently needed federal aid, through the states, to owners of small forest properties for better management of their forest areas. The more conspicuous respects in which the House failed to show understanding of the essential character of certain activities are as follows:

1. It wiped out completely Bureau of Plant Industry funds for continuing its work on diseases of young forests, both natural and planted. In doing so the House appears to have ignored the fact that the nation's future wood supply depends upon adequate protection and care of its young forests and that young trees are highly susceptible to annihilating diseases. Unless we can bring new forests through their seedling and sapling stages the crop is lost and with it the restoration investments. The amount saved by this penny-pinching amounts to only $87,720.

2. It reduced by a half million dollars funds for the Forest Products Laboratory at Madison, Wisconsin, in continuing its work of developing new and better methods of wood utilization. Grounds given are that much of the work of this research laboratory "is academic and visionary." The 36-year record of the laboratory, during which it has won recognition as the greatest wood research institution in the world, does not sustain this ill-informed view. For the American people it is sufficient to say that not one of them is unaffected by the laboratory work. Its research through the years helped to shorten and win two world wars. It has placed the nation in a position of world leadership in chemical and technological wood research. The importance of supporting its work in the interest of both peacetime development and national security seems incontestable.

3. It reduced by $600,000 the amount recommended by the Bureau of the Budget for the handling of timber sales in the national forests. Sales of national forest timber return to the U. S. Treasury four or five dollars for every dollar spent by the Forest Service in administering sales. Furthermore, proper harvesting of mature stands in the national forests increases the growth of trees left and makes way for new crops of timber. Adequate funds for this activity represent good business and good forestry and at the same time provide the people of the United States with needed lumber, poles, posts, mine timbers, railroad ties, pulpwood, fuelwood and Christmas trees.

4. It cut by one-half funds for continuation of the Forest Survey which supplies and keeps current an inventory of our forest resources. This information is essential to intelligent national conservation and management of the country's forests and, in addition, is in constant use by industries and communities throughout the country, particularly those whose economy is largely based on wood-using or wood-manufacturing plants. It furnishes also basic data on forest supplies, their location and character, on which industrial investments and forest policies, both public and private, are often based. In the event of war the Forest Survey may be of momentous importance by providing an inventory blueprint of where different kinds and types of timber needed by the military without delay can be obtained.

The foregoing items represent budget savings aggregating less than $2,000,000, an insignificant item in the dollar reduction of the Department's budget as approved by the House. In the light of the fact that the House included $5,300,000 for the building of highways across national forests, these savings stand out not only as misplaced economy but as peanut gambling with a great natural resource. When the House bill is taken up by the Senate it is to be hoped that body will give more statesmanlike consideration to the importance of these activities.

DO WE NEED A SHADE TREE SERVICE?

Buckingham

Yes, says the author, an authority on tree selection and breeding, if greatly expanding public interest in shade trees is to be served. Here he tells you why

By ERNST J. SCHREINER

MAN does not live by bread alone. Over the centuries he has been asking for more—for "a book of verses underneath the bough, a jug of wine, a loaf of bread—and thou beside me singing in the wilderness." Verse, wine, bread, and song are immediately available to all who have the price. But the bough and the wilderness—that's a different story!

These never will be available in the market place. Wherever city or town folk enjoy the shade of a bough, in their own backyard or in the "wilderness" of a park, someone had to preserve or plant those trees many years ago. Of course, large trees can be transplanted, but not at a price within reach of the common man. And vintage trees cannot be moved—not even for princes.

That shade trees are becoming increasingly important in the lives of the American people is an accepted fact. Evidence of this is plainly written in our own yards, in our parks and along our streets and highways. There is hardly a man, woman, or child who has not enjoyed the shade and beauty of trees; and their voices rise in protest when storms, disease, or insects blight shade trees in large numbers.

Since the advent of the automobile the appearance of country highways and byways no longer is a matter for concern only to rural people; there are few Americans, city or rural, who do not at one time or another travel by car or by bus on highways far from home. Who can estimate the meliorative effect of a tree-lined roadside on body and spirit?

The earliest settlers undoubtedly saved the best trees around their homes and on their village streets and squares. As the villages and towns grew in size and these original trees were lost through age, disease, or accident, householders and town governments began to plant new ones. In the early days these were dug from adjacent woodlands, but during the past century tree planters have become more and more dependent upon commercial nurserymen. As a result, the urge to plant fast-growing trees or "something different," combined with ignorance of tree requirements,

has cluttered many towns and cities with short-lived trees and with natives and exotics thoroughly unsuited to the growing conditions.

Better shade trees are needed. And they can be developed by scientific selection and breeding. We need trees that can endure the difficult environment of city streets and parks, trees that are disease resistant, trees that can be grown into shapely specimens on poor sites, trees that will grow rapidly and live for many years. As a rule, fast-growing trees are short-lived, but there is sufficient individual variation to indicate that the breeding of fast-growing, long-lived trees is possible.

The so-called "Lafayette Tree," a native poplar growing near Geneva, New York, is an example of how long a member of a relatively short-lived species may live. In 1927, this old tree measured better than 21 feet in circumference but was still in excellent condition with a fine crown and excellent foliage. The age of the tree is not known, but it is undoubtedly well over 100 years.

Trees such as the ailanthus (the tree that grows even in Brooklyn), Asiatic elms and soft maples, native and exotic, offer excellent possibilities for selection and improvement. The ailanthus has become virtually indigenous, grows under some of the worst environmental conditions conceivable, and persists in spite of excessive abuse even in the dingiest city streets.

The improvement of agricultural and horticultural plants by scientific selection and breeding is common knowledge. In recent years forest tree breeding, still in its infancy, has demonstrated that there are equal and even greater opportunities for the improvement of our forest trees. Yet, with literally thousands engaged in the breeding of agricultural and horticultural crops, there were less than a dozen men engaged in tree breeding before the war, and there was practically a complete lapse for the duration. Tree breeding with many species will serve both the shade tree and forestry fields. The progenies derived from well directed breeding may be expected to include better shade trees and better forest trees; only the selection criteria will differ.

An increasing number of Americans, both urban and rural, are seeking information on planting and care of shade trees. Unfortunately, their questions can seldom be answered with assurance. Tree research, left largely in the lap of the forestry profession, both at home and abroad, has been marred by a serious lack of fundamental research based on trees as individuals. Foresters are primarily "sociologists" interested in the growth and development of trees in stands or communities; as a group they seem to have lost sight of the fact that in the final analysis the success or failure of the forest stand is dependent upon the growth and development of trees as individuals.

There is great and immediate need for extensive collation of existent research findings and for additional but correlated research to guide the home owner, the shade tree nurseryman and specialist, and the city, park and highway forester in the planting and care of *individual* trees. If the annual private and public expenditures for maintenance and care of shade and roadside trees could be compiled they would total millions of dollars. What better criterion is there of the intrinsic value of anything than the money spent year after year to obtain and maintain it?

Public interest in shade trees is

Since all Americans share in the benefits of roadside trees, education and research directed toward their betterment is definitely a public responsibility, says the author

W. F. Clayton, Jr.

largely individual and inarticulate; it seldom finds an outlet for unified expression. Nevertheless, education and research directed toward better shade and roadside trees is definitely a public responsibility that should no longer be postponed.

We need a National Shade Tree Service—a clearing house for tree research, an educational link between research and practice, and a source of information and education for the general public.

Tree research has been going on for many years, in many places, and the published results are very widely scattered. Consequently, there is today a serious need for correlation and integration of widely scattered observations and scientific information on the growth, development, and proper management of trees. Although this need is serious with respect to the sorting-out of information that would be immediately useful in practice, it is far more serious with respect to the "fundamental research aspects," the answers to the questions: How does a tree grow and reproduce? What factors affect its growth and reproduction? How can these factors and their effects be accurately measured?

These questions will be answered eventually by a weaving together of many isolated bits of basic information. Research specialists can uncover fundamental facts without realization of their basic nature; and when published they may lie buried for many years in the journals of their specialties. Research workers studying forest and shade trees have uncovered and will continue to uncover small sections of basic information. But unless such bits are carefully tied together and accurately woven into the pattern of tree development and growth they will fail to serve either research or practice. The piling up of observations, facts and figures is merely the starting point of research. There has already been much of this. The time has come to sit down and think. Facts and figures must be sorted, arranged and mentally digested.

In this way practice will be served immediately, blind spots will be brought to light, and future research can be more surely oriented. *This is a primary national shade tree need today.*

A National Shade Tree Service with a relatively small but able and energetic staff of tree scientists, could serve as such a clearing house. Although members of the staff might wish to undertake or continue some original research, they should consider first the summarization and coordination of existent research information and data. They should not overlook or underestimate the results obtained on the many small investigations to solve specific problems that are frequently undertaken by private individuals and corporations interested in trees.

They should be keen scientists with the capacity to offer *acceptable* guidance, the imagination to compress national research needs into research enthusiasm in other men, and the spark to fire these pent-up enthusiasms.

Tree research needs are so extensive that it will be extremely difficult, if not impossible, to finance adequately a single research unit large enough to cope with even the most urgent problems. In fact, it is doubtful whether a single large unit could carry on efficiently the widely diversified aspects of shade tree research. Many shade tree research jobs could be handled most efficiently through fellowships assigned to institutions with leaders in specific fields of research.

Cooperative shade tree research might eventually develop even further. Cooperative funds for research by state agencies and at land grant colleges, administered through a National Shade Tree Service, would be in line with established precedents in agriculture and forestry. It would be the responsibility of a National Shade Tree Service to keep all cooperative research within the boundaries of long-time objectives.

A National Shade Tree Service would require an arboretum for certain phases of both its scientific and educational work. But a single arboretum, regardless of its location, can hardly have national significance either for such scientific purposes as the testing of exotics and new tree types, or from the standpoint of edu-

(*Turn to page* 334)

W. Dovel LeSage

As things now stand, the author contends, home owners cannot be properly informed on the planting and care of their shade trees

TREES AGAINST THE DESERT

On famous Cape Bon, where Hitler's Africa Corps was trapped and destroyed, another victory is in the making—this one, trees over drifting sand

By ROBERT E. KLEINER

CAPE Bon, the 70-mile-long thumb of land sticking out into the Mediterranean from Tunisia, would today be just another name on the map had it not been that on its bleak, brush-covered expanse were trapped the remnants of one of Germany's finest fighting machines—the Africa Corps—marking the end of Axis power in North Africa.

Immediately after the Allied victory in Africa the Axis airdromes on Cape Bon were rapidly made serviceable by American engineers. With newly-built landing strips, they became the bases for the softening-up process for the invasion of Sicily. In late June, 1943, the light anti-aircraft battalion of which I was a member arrived on the Cape. My battery was given the mission of defending a new fighter strip at Dar Chichou, a settlement near the end of the Cape. It was quite a task finding this strip as the planes had not yet arrived and an engineer detail had only smoothed off a few rough spots in a pasture that lay adjacent to a great expanse of sand dunes and bare rock. The area had been so badly eroded by the hot winds that blow across the Cape during the summer months that no vegetation remained.

As soon as the gun sites were chosen, we set out to find a suitable location for our command post. Less than half a mile from the landing strip was a young forest that seemed to stretch across the Cape. It offered shade and camouflage—an ideal location. Hardly had we set foot in it, however, than a uniformed Frenchman appeared and excitedly objected to our presence. Fearing mines, we gathered around while one of our men, who spoke French, questioned the man. It turned out that he was a forester assigned to protect the young stand of trees. His emotional objection stemmed from the fear that we would flip a few cigarette butts around and "poof!" the entire forest would go up in flames. Through the interpreter I assured him that as an American forester I was fully aware of the fire hazard—but that we would have to use the forest nevertheless. Finally, after exacting a promise from us that every precaution would be taken to avoid fires, he calmed down somewhat. But we left him a badly worried French forester.

The more I saw of this vigorous young forest of pines, willows, and eucalypts in the center of a virtual desert, the greater was my desire to know more about it. So I decided to visit the forester at his home. This I did at the very first opportunity and was well rewarded.

As the French forester told the story, years of overgrazing had so denuded the lower part of the now historic Cape that the progress of sand dunes from west to east, driven by the hot, strong winds of summer, threatened to convert all of Cape Bon into a true desert. In an effort to check the dunes and tie down those already formed, the Tunisian Forest Service decided upon an afforestation project. First, rows of papyrus shoots were planted in the hollows between dunes, in strips from 30 to 60 feet wide. These were separated by unplanted strips. As soon as the papyrus had become established sufficiently to break the force of the wind and slow the drifting of sand, pine, cypress, willow and eucalyptus seedlings were set out in the unplanted strips. The most common species used was *Pinus canariensis*, Canary pine, the forester called it.

The success of the project was remarkable. Only 12 years after planting, the trees had a diameter of from three to six inches and many were 30 feet high—a healthy, vigorous young forest where shortly before had been an expanding desert. The change on entering the forest was pleasing. From the heat of the African sun and scorching winds, we entered the quiet cool (comparatively) of forest shade where great numbers of birds flew and sang, where the ground was covered by green grass and pine needles and where rabbits and grouse abounded. Here, we could almost forget we were in Africa. Looking at the pine boughs against the blue sky, it was easy to imagine we were back in a young forest of America.

The Cape Bon forest consisted of strips of trees separated by almost impenetrable jungles of papyrus, now 10 feet high. The forest was of good stocking and all the trees seemed healthy, untouched by insects or disease. There was, however, some evidence of damage by the Germans during their period of hiding in the forest. As soon as we moved in we constructed trails around our area to serve as firebreaks as well as for guard purposes.

During the last days of fighting on the Cape the Germans almost murdered the French forester on the charge that he was hiding Allied fliers in the forest. Searching for the suspected airmen, the Germans hurled grenades into the small jungles of papyrus with the result that some areas of the forest were burned over. Workmen were rapidly salvaging the fire-killed trees which, even though of small size, had great value in wood-scarce North Africa.

Near the forester's house we found a sand dune so high that its now grass-covered top towered above the level of the trees. From here it was easy to see how effectively the forest had checked the advance of the dune area and had tied down a part of it.

The wreckage left by the Africa Corps on Cape Bon will soon rust away, but the trees in the forest of Dar Chichou will tower higher and higher as the years go by. They will speak eloquently of what trees can and will do for the earth and for man when given the opportunity.

Wonderland Trail

If the idea of exploring glaciers in mid-summer appeals to you, here is an invitation to accompany a national park ranger on a ninety-mile trek around rugged Mt. Rainier

By ROBERT K. WELDON

Devereux Butcher

IF the thought of skirting 40 square miles of ice in the heat of summer intrigues you, the chances are that the Wonderland Trail in Mount Rainer National Park, Washington would fulfill your fondest hot weather dreams.

There is nothing quite like this trail. Flanked by some of the boldest scenery in North America, it follows a 95-mile circuitous route around majestic Mt. Rainier—a 14 408-foot peak down the slopes of which move 26 glaciers.

The trail winds its way through high-altitude meadows but it seldom loses touch with tons of moving ice—40 square miles of it—thus giving the hiker an opportunity to skirt the terminal points and see turbulent glacial streams pouring from the snouts of the ice heaps. In this way the hiker is introduced to a world of ice and snow in an area of almost unbelievable beauty, for acres of mountain flowers are serene almost in the shadows of the big ice floes. And beyond the flowers, deep in the mountain crevices, can be seen crystal-clear lakes, many famous for trout fishing.

It would be erroneous to say that Mount Rainier National Park is famous only for its mountain peak, its 26 glaciers and spectacular views of mountain scenery. Deer, bear, mountain goats and a host of smaller animals are common. And flowers are notable both for their beauty and variety. The atmosphere is electric clear.

Interested? Fine!—then let's get out our hiking boots and head up Wonderland Trail.

A week or 10 days is needed to complete the circuit, but at various points around the mountain are developments where you may terminate your journey or pick up cached supplies. Also there are shelter cabins 12 to 15 miles apart. Otherwise, the trail lies in wilderness country preserved for all time.

Our hike begins at Longmire, park headquarters, which is readily accessible by good highway from Tacoma or Seattle. We have arranged to leave some of our food, spare clothing and other equipment at an approximate half-way point at Yakima Park. Consequently, it is not necessary to start the trip with discouragingly heavy packs.

It is a nice summer day, so we set out at a brisk pace. Soon "world weariness" slips away as easily as the little Douglas squirrels around us scurry up the trees. The way is up—up through the dense green forests of large trees which are so characteristic of this elevation and section of the country. There are beautiful specimens of Douglasfir, hemlock and western redcedar. These are the types of forests which produce much of the nation's lumber—but forests in national parks are preserved in their natural state against commercial encroachments. Compared with the vast stands of these species in the states of Washington and Oregon, the park forests are small—a chip in the entire timber tree picture. They stand, these park forests, preserved against the

White grandeur—forty square miles of ice cap the summit of Mt. Rainier, 14,408 feet above sea level

ax for all time—a beautiful inspiring sample of the original primeval forests.

With steady hiking we soon reach forests at high altitude which have a somewhat different appearance. As we pause for a quick breather we realize that now we are in an old burned area nicely reforested with white pine, firs, and some hemlock. "Be Careful With Fire!" The words of the rangers, of signs and posters come to mind. It has taken nature about 50 years to begin to heal the damage of this old burn.

Suddenly we become aware of musical sounds. Music? Yes, it is a vagrant breeze in the trees among the pine needles, or the distant roar of 250-foot high Comet Falls, or perhaps the quieter music of Devils Dream or Fishers Hornpipe Creek. The music lasts only a moment and we are hiking again.

Soon we approach the first high area, or mountain park as these above-tree-line meadows are called. This one is Indian Henry's Hunting Ground. There is a shelter here—and many enticements to detain us. Views of the mountain are magnificent. Mirror Lake, where reflections of the peak are perfect when the water is calm, can be seen in all its quiet beauty. Many other lakes dot the meadows. Have a look off toward Pyramid Peak. There among the rocks and crags above timberline is good goat country.

We bring the day to a close at Indian Henry's shelter—but not before we stalk goats for pictures. It has been a good day, an easy one. But after all, why hurry? Why not appreciate things to the utmost as we go along? Miles can be made along less interesting stretches of trail. After a big supper it is pleasant to watch the sun's subtle brushwork add red to Mt. Rainier's eternal snow.

On the trail early the following morning we pick our way through boulders at the lateral moraine of the Tahoma Glacier. It is easy to see that these large ice masses, several miles long, are continually wearing away at the mountain, bringing down huge boulders and debris. As we gaze at the glaciers and rocks we are reminded of a story a ranger told us before we started on the trip. When one party of travelers heard that glaciers receded as much as 70 feet a year, they asked where the ice was going. "Back up the mountain for more rocks," was the ranger's quick answer. Actually, that is pretty nearly true, for the glaciers do bring down untold tons of rocks.

A peculiar squeaking noise is likely

to divert attention in this area. It will be a cony sitting on a rock pile. These little animals with small rounded ears look somewhat like tiny rabbits. Along the glacial moraines they live in rocky slides. In late summer they gather hay, stack it in neat shocks to cure, and then haul it into their comfortable winter quarters far under the boulders.

The old saying "all that goes up must come down," is true of hiking. The trail now drops by switchbacks to the South Puyallup River. Along the way we see thimbleberry, alder, and elderberry thickets, and enough other shrubs and flowers to please the heart of the most ardent botanist.

Occasionally one is startled by the whir of a sooty grouse flying up suddenly from near the trail. On an old slide area, extending down the mountainside for considerable distance, is a remarkably fine growth of Alaska cedar with its characteristic drooping branches. If the day is calm the stillness in the forest is broken only by the distant boom of the turbulent, usually muddy river. Virtually all streams that have their origins at the terminal points of glaciers are muddy, for they carry off the dirt and rock material ground up as the glacier moves down the mountainside.

As evening of the second day approaches, the lure of the sleeping bag strikes early. Pictures of the day's hike flit through our minds as we settle down in the warmth of the "sack"—deep forest, hanging glaciers, mountain meadows, wildflower fields, and goats, goats, goats. We are chasing goats as sleep overtakes us.

Dawn of the third day finds us seasoned hikers, more or less. We are in good condition and our spirits are high—just the right setup to stop for an hour at Golden Lakes where fishing is good. We will eat well tonight—crisp trout fried brown and thoroughly.

From Golden Lakes the Wonderland Trail drops down to a low elevation of about 2,700 feet from Sunset Park's 5,500 feet. Here the flora belong to the Transition zone—the lowest life zone represented in the park. It presents a great contrast to the Arctic-Alpine zone (elevations from 5,000 to 6,000 feet) which we have been traversing much of the time.

In the Transition zone we find such plants as swordferns, devils club, alders, vine maple and willows. Occasional cottonwood trees grow along the river banks, looking out of place among the thick conifers. North and South Mowich rivers, which we must cross, are glacial streams subject to sudden fluctuations in flow. Sometimes these streams may be forded easily in the morning and be muddy torrents by afternoon. Bridges and foot logs built by the National Park Service are continually being washed away, or what is just as bad, the erratic streams change their channels almost maliciously on occasion leaving the bridges high and dry, going nowhere.

But we cross successfully after finding a combination of foot logs and old bridges and finally reach Mowich Lake. It has been a tough pull out of the river bottoms to the lake and we are a bit tired, but happy. Mowich Lake is good fishing but is not open until August 1. It is the largest body of water in Mount Rainier National Park.

Upwards from Mowich Lake is high country again, alpine meadows and miles of open trail. Is there any more pleasing experience than to rest in warm sunshine in grass meadows full of brilliantly colored flowers with snow and glaciers close by? All nature is intensified—just as high country flowers are more brilliant in color. Much of the way now may still be on snow, depending on the season. We reach elevations around 6,000 feet—above the tree line.

Then presto, down again via switchbacks, past 50-foot Cataract Falls, to an elevation of 3,500 feet. Our knees feel a bit shaky! Downhill for so long is a test on the legs. We are not very high above sea level, yet this is the terminus of the Carbon Glacier, lowest elevation for glacial ice in continental United States.

If the day is hot we stop here to see the glacier at work. The Carbon is about six miles long; from its snout starts muddy Carbon River. Rock and dirt fall from the ice walls of the melting glacial terminus and the river runs turbulent below.

Next we hike up along a side moraine, back into meadows fragrant in the sun with the warm scents of pine needles, resins, and flowers all mingling together.

Soon the senses respond to a new thrill and another reason for the Wonderland Trail's unique position among mountain trails of America. This is Willis Wall, named for Professor Bailey Willis, who explored this section of Mount Rainier. It is the head wall of a glacial cirque of such enormous proportions as to stagger the imagination. At its feet begin the ice masses of Carbon Glacier which have helped to gouge out this tremendous one and a half-mile-wide amphitheater in the side of the mountain. The head wall of the cirque is 3,600 feet high. Such enormities of glacial carving leave you shaking

Carbon Glacier, at 3,500 feet elevation, is the lowest point at which moving ice is found in the United States

Department of the Interior

The shaggy massiveness of Mt. Rainier presents a rugged picture in bold relief as contrasted with the quiet serenity of Eunice Lake, nestled snugly in the peak's shadow

your head in wonderment. Certainly it was the theme of our talk as we settled for the night at a shelter cabin near Mystic Lake, elevation 5,800 feet.

The fifth day on the trail slips by as rapidly as a sooty grouse's sudden, whirring flight. We pass the snout of Winthrop Glacier and up a stretch of alder bordered trail, cross the West Fork of the White River, wind through vast open meadows, before reaching the developed area at Yakima Park. At White River we pick up our cached supplies and are ready for the "last lap" of the Wonderland Trail.

In the forest on the sixth day, along Fryingpan Creek and headed for Summerland, we are greatly impressed with the jungle-thick forests characteristic of the lower elevations and to only one section of America—the western slopes of the Cascade Mountains.

Summerland, when reached after a good bit of a sweat up the trail, is a gem of meadowland on the edge of timberline. Across from it is Goat Island Mountain, well named, because goats are abundant in this section.

From Summerland the way is rugged. For about three miles it is above any sign of trees. We see the broad expanse of Fryingpan Glacier and, at its feet, a little pea green lake. Nearby is an area of red volcanic rock—so red in fact, that the small stream running across it picks up eroded sediments coloring the water brick tinges.

Then once again the way is down, though still in high country with elevations up to 6,500 feet. At Indian Bar there is a stone trailside shelter with a big fireplace, and bunks fastened on the sides of the wall. Nice place to call it a day.

The seventh day we hike to Nickel Creek. Fishing is good.

One more day will complete the hike around the Wonderland Trail. Along the way to Longmire, our starting point, the trail affords many new mountain views. There are other points of interest such as the Box Canyon of the Muddy Fork of the Cowlitz River. It is well over 100 feet deep (straight down) and only 20 feet wide. If we are hiking in strawberry season, the country near Box Canyon should satisfy our appetite for this delicious wild berry. If we are later in the season, it will be huckleberries in the country farther along near Reflection Lake.

From Reflection Lake the trail winds downward again past 168-foot Narada Falls and the Nisqually River to Longmire. With arrival at headquarters, we can say "mission completed," but the chances are we will be just a little bit sorry it could not have lasted another day or two.

There's something about the Wonderland Trail in Indian Henry's hunting ground that appeals to hikers. For it has been noted that people who make the trip never seem to tire talking of their exploit.

FORESTRY'S SEAT BY SWEDEN'S FIRESIDE

By

ROBSON BLACK

A mere conservationist, wandering about Sweden with none of the inhibitions of a learned forester, finds himself measuring a "sustained yield" that cannot be set down either as cubic meters, or board feet or cords. Maybe it should be described as estimating timber resources as a social utility. At all events it represents an angle of vision which already has won for forest management most of its victories to date in North America. To employ it as your travel-guide within the Swedish realm brings some fascinating and enriching rewards.

For example, let us take a day or two in the Parish of Orsa, which lies in mid-north Sweden. I had heard of it as a sort of taxpayer's Utopia, where men were men and not one of them a tax collector. Accompanied by the local forest-master, we walked about the parish town until in sight of a handsome new folk-school.

"That must have cost you a nice penny," I ventured.

"Our commune forests paid the bill," was his reply.

Down another street we saw a commodious building in a landscaped park. The forest-master anticipated my question. "That's our home for the aged. Our forests paid for that, too."

I waved a hand towards the paved highways. "Yes, the road system as well," said my companion, "and the importing of pure-bred livestock, and shiploads of fertilizer and the draining of marshes."

"All from your woodland surpluses?"

"Every kroner."

Well, let's get to the explanation. Over a half-century ago, Orsa's commune councilors decided upon a series of mammoth sales of Scotch pine and Norway spruce from the over-mature stock of the commune's forest. In an uncommonly favorable export market, they netted the parish treasury $3,500,000, a handsome reserve, and still intact. From its interest returns and the continued utilization of the same forest areas, all outlays on municipal improvement, as well as the income-tax accounts of the parish farmers are fully discharged.

Most of the thousand farm-and-forest owners of Orsa take three profits from their home-grown tree crops: their share of the permanent "fund," plus a continuing share of the commune or "folk" forest, plus all the sales they can make from their private woods. These bring a net of $448,000 a year. The few residents of the parish who do not wear a farmer's diadem have recently suffered an income tax of four percent. It is open to question, however, wheth-

No bond issue was floated to build Orsa's home for the aged. Communal forests footed the bill

er the benefactions they enjoy from the public expenditures of forest money do not in effect reduce their tax rate to zero.

It was 63 years ago that the government of Sweden transferred to the landowning parishioners of Orsa 271 square miles of land mostly covered by forests of Scotch pine and Norway spruce. In the deed of transfer it was required that the tracts should form a forest reserve, substantially under public control.

Between 1886 and 1895, a thumb-rule selection felling removed all trees measuring 13 inches or more, breast high, and proceeds of the sale created the community fund of $3,500,000, as previously mentioned.

In the years that followed, very little was extracted from the Orsa forests until a new management plan was worked out and approved in 1910. Then came a period of clear felling lasting nearly 10 years, and this in turn brought about selection felling aiming at a shelterwood system. This covered 173,000 acres of community forests, and 346,000 acres of private forest.

By 1939, the volume of the growing stock was practically the same as 20 years previously. At the same time, the percentage of class A stock had increased from 14 to 38, and the average rate of increment in the same class had gone up from 2.5 to 3.5 percent for pine, and from 2.4 to 2.7 percent for spruce, illustrating that trees from 200 to 300 years old can still put on growth when released. The 20 years of selection felling, 1919 to 1939, had materially advanced the value of Orsa's woodlands so that the volume cut annually could be safely increased after 1939 from 1.9 million cubic feet to 2.7 million cubic feet.

Forest ownership is vested in the communal or parish council, and in the individual farmer who, in virtually all instances, possesses a piece of woodland adjacent to his open fields Such division of ownership, however, implies no variation in the technique of forest management, for the latter is defined by the National Forest Conservation Board, modified in detail by the judgment of the subsidiary boards set up in each of the 25 "provinces." No community forest and no private forest escapes from this overall jurisdiction. However anxious a farmer or other woodland owner may be to cut a new road through his bush, or sell off his pulpwood to an eager buyer, he uses neither ax nor saw until the Conservation Board has given consent.

Falun's 70-year-old pulpwood forest where selective cutting has insured stable yields for years to come

Once a community council accepts the cutting quota assigned to it, the execution of the task rests with the district forester who, in turn, uses his staff of "wardens" (school-trained junior foresters) to direct operations. To the greatest possible degree, all cutting is done with the purpose of improving the reproductive value of the stand. In years of good demand and high prices for poles, for example, the maximum number of poles will be taken out. But at no time is the merchandising urge allowed to dominate sound silvicultural practice.

Many, yes hundreds, of potential Orsas in North America's great era of ravening exploitation have risen from a wilderness to take the form of hustling towns. The difference has been in the date of expiry. The American candidates for the ghost-town cemetery were operating on a short-term credit. A ghost forest had no option but to conduct the town's obsequies. The Orsa of Sweden works on unlimited credit. As long as wood products sell in world markets Orsa sits pretty, for her woodland foundations know no ending.

Let us go across country a few miles to Falun. It is the headquarters of the oldest joint-stock company in the world. It seems incredible to meet a corporation that came into existence just a couple of centuries after the Battle of Hastings and almost 400 years before the Hudson's

By exercise of self-discipline and a collective shrewdness the Swedes have set up a "system" and built themselves into it

Owned by the Great Copper Mountain Company for 700 years, these mid-northern tracts today are more productive than ever before

Bay Company. They call it Stora Kopparbergs Bergslags—the Great Copper Mountain Company—and although its cradle is dated 1288, it has all of the expansive vitality of a great American mass producer. The copper mines have petered out, after hundreds of years of exceptionally rich production, but the giant marches forward with iron and steel, pulp and paper, and hydroelectric enterprises.

The original forest lands of nearly 700 years ago, which for ages fed the bonfires that fractured copper ore from the great open pits, have now been turned to other forms of utilization, under the strictest codes of silvicultural management. It is well to note that the rough-and-ready, but shrewdly effective, schemes of forest culture in vogue in 1288 have broadened to a very exacting definition of modern forestry, and that the self-same areas in 1947 are yielding more cubic meters an acre of spruce and pine than when the first ax bit into the first tree.

No forest-owning company in Sweden is allowed by law to buy any more timberlands, but prior to the law's adoption, Stora Kopparbergs purchased 120 farms to get possession of their rich forest properties. Thereupon the Swedish legislature passed an act obliging such multiple farm-owners to maintain their open fields in maximum production of field crops and livestock. The restriction gave a material compensation in that the farm population was held intact for winter employment on woods operations, and in the meanwhile is housed by the new landlord in excellent homes, many with central heating, running water, modern bathrooms, and hardwood floors. The lure of the bright lights and movies is as sore a problem in Sweden as anywhere else.

In every country with a sense of forest management, reproduction after cutting is a dominant concern. The vital distinction as between Sweden and North America is that the Swedes once and for all grasped the nettles of private profiteering and carelessness and passed a law in 1903 making it compulsory upon every man to provide for regeneration of his woodland. "Felling of trees may not be so carried out, nor the soil so treated after cutting that forest reproduction obviously cannot take place." And the "obviousness" of such process is not left to the owner's judgment but to the Forest Conservation Board as the custodian of the overall public interest. At the same time, the boards, operating as a county agency (under general national direction) and mainly elective in membership, use their mandatory powers with moderation, preferring to educate and advise the small forest owner through their local staffs of graduate foresters numbering two to eighteen for each county area.

One can better understand the silvicultural controls that time and experience have fastened upon virtually every piece of timberland in Sweden by noting the helplessness of the average farmer to abide by the law without expert guidance. The Swedish law of 1923 forbids the forest owner to cut "younger forests" except for improvement thinnings. How is a farmer (and farmers own half of Sweden's forests) to know what is legally meant by a "younger forest," and what trees should he take out as thinnings? Clearly, his actions must be supervised by a forester, and in submitting his case to the local conservation board he has helped to establish an almost universal grid of technical control over the woodlands of the nation, no matter in what category of ownership. As has happened in other lands, notably Czechoslovakia, the management of forests by foresters tends to attain a uniform and professional level of standards not seriously influenced by the source of the engineer's pay check.

The forest conservation boards, common to Norway and Finland as to Sweden, have proved effective because of their localized membership and the moderation of their measures. Each county board shoulders the by no means easy problem of enforcing the national laws. The woodland owner is advised and assisted rather than coerced. Silvicultural measures are held to a minimum consistent with maintaining forest production on a satisfactory public level. Indeed, the whole process of elevating forest man-

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"FISHING" FOR DEADHEADS

By WILLIAM J. DUCHAINE

There's a new kind of "fishing" on the streams of Michigan these days—and for those who can handle proper tackle the catch averages sixteen feet

When Carl Olson refers to the "big one that got away," the Stephenson, Michigan, farmer isn't speaking of a handsome speckled trout or a scrappy bass. He's referring to a "deadhead"—a water soaked log. For there's a new kind of "fishing" going on in the streams of northern Michigan and Wisconsin—fishing for deadheads, the stray logs that sank to the river bottoms back in the days of the dramatic spring log drives. Or it might be described as half fishing, half logging. The quarry is a tree trunk; the tackle, a pikepole and dog hooks.

Farmers and old-time lumberjacks, who sandwich deadhead fishing in between their regular jobs, are finding this type of angling quite profitable. The reason, of course, is the exceedingly heavy demand for lumber.

In the roaring days of the big log drives—days that inspired Stewart Edward White's logging novel, "The Riverman,"—the lumber interests lost large quantities of logs in jams at sharp river bends. Some of the logs rammed into muddy banks or river bottoms and became embedded and waterlogged. Loggers are familiar with the deadheads, some of which, like icebergs, show only a tiny portion of their length in the water. These partially submerged logs constitute a hazard on streams since they sometimes rip out boat bottoms and smash outboard motor shear pins.

Salvaging operations got under way last summer on the Muskegon, Manistee, Tahquamenon, Cedar and Menominee rivers in Michigan, and the Oconto River in Wisconsin. Out West, near Lake Coeur d'Alene, Idaho, the retrieving of deadheads is a big operation being carried on by Jimmy Murray, who went to that country after removing most of the logs left in the tributaries of the Mississippi River in Wisconsin and Minnesota. Murray reports Lake Coeur d'Alene is "practically paved with logs," and he

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"Got one!" A pay log is harpooned on the Big Cedar River. Albert Delfosse steadies the deadhead with a pikepole while George Olson makes it secure

Maine Development Commission

Beauty such as this may vanish unless the destructive march of the birch borer is checked

Beetle in the Birch

By H. B. PEIRSON

Residents of northern New York and New England dependent on substantial hardwood industries for a livelihood are concerned these days, and rightly so, over the ravages of a tiny beetle, only three-eighths of an inch long, that is spreading destruction through the birch stands of the Northeast. The beetle is known as the bronze birch borer, and foresters and hardwood industry men are grimly cognizant of the fact that this menace is striking at the very economic core of prosperous industries dependent on a constant supply of white and yellow birch.

Indeed, the constantly spreading infestation has brought the birch industry of the Northeast face to face with catastrophe. Millions of cords of both white and yellow birch have been killed by the borer. Two-thirds of the birch trees in Maine are estimated to be dead or dying.

What this means to workers in towns and communities supported mainly by birch industries is evident. These industries turn out thousands of articles such as spools, toothpicks, wooden heels, furniture, toys, clothespins, and tool handles. These products are shipped all over the world and their value runs into many millions of dollars. And the business is growing, with demand of products exceeding supply in many cases. Furthermore, during the war demand for birch veneer stock grew tremendously —and the demand is continuing.

The outbreak was first reported in New Brunswick in 1935. Dying trees became very noticeable by 1937, and in the summer of 1939 the infestation had reached into several Maine towns bordering on New Brunswick. Inspection at that time showed no dying in areas west of these towns but in the succeeding years the infestation spread rapidly across Maine, northern New Hampshire, Vermont, and is now reported in the Adirondacks and in parts of Quebec. To the east the spread was moderate, but it is now reaching through Nova Scotia. The movement to the south appears very slow. The forerunner of an advancing infestation seems to show up first on the higher mountains where the soil is shallow and growth slow.

As the infestation becomes intensified, whole mountainsides and valleys become covered with gaunt skeletons of dead yellow and white birch. In

New England industry faces critical problems as bronze birch borer ravages forests of Northeast — with two-thirds of Maine's birch stands already dead or dying

the more heavily infested areas one is reminded of some great blast that has seared the foliage and branches from the yellow birch and has left only the trunks of the white birch to stand for a few years.

The bronze birch borer is no newcomer to the Northeast. It is a native insect which normally attacks and kills trees that have been weakened by over-maturity, heavy thinning, or drying out. Following pulpwood and lumbering operations where the softwoods are taken out, the birch which is left usually is killed within a few years by this insect. Pure stands of birch which are heavily thinned likewise quickly succumb to the borer. These facts were brought out in a study conducted in Maine in 1926.

Between 1898 and 1900 thousands of ornamental white birch trees were killed in New York state following severe droughts. Around 1930 ornamental birch in many parts of New England were killed. There seems, however, to be very few records of birch in solid forest stands being killed by the borer. There is one such record from the Ottawa River Watershed in Canada, in 1900, and another possible record from Shelburne, New Hampshire, around the year 1911.

Since much of the birch in northern New England is from 100 to 300 years old, it is evident there was no such epidemic as the present during the past two and a half centuries. Beyond that the forests were in such condition as to have prevented any such outbreak. Yellow birch occurred in mixed stands and white birch, which normally comes in on burned-over areas and pastures, probably occurred only scatteringly in the older forests. It is not a tolerant species.

The actual killing of the trees seems to be due to a very heavy infestation of the bronze birch borer. It is almost impossible to find a dead or dying birch that has not been girdled by this insect. Even healthy trees are being repeatedly attacked until they become so weakened they finally die. As in the case of practically all forest insect outbreaks, there are factors which have made conditions favorable for the attack. Some of these factors require more detailed research, but there are many points which a four-year study of sample plots in Maine has already brought out.

For years it has been the practice throughout much of the north woods to cut the softwoods and leave the old growth birch. This practice has left large areas of weakened birch. R. W. Nash, while carrying on entomology studies for the Maine Forest Service, found that during the past 15 years there has been a decided slowing up in growth, not only in birch, but also periods of slow growth in sugar maple, beech, poplar and spruce. The slow growth appears to be tied up with deficiency of rainfall and attack on the trees by defoliating insects. The birch in particular has been greatly weakened by leaf miners and skeletonizers, several of foreign origin. The widespread killing of beech by the beech scale and nectria fungus has opened up stands over

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Closeup showing how the borer, a destructive native insect, girdles the trunk

And this is the result — thousands upon thousands of dead or dying birch

THE STORY of a MOUNTAIN CANYON

By H. G. WILM

On a small Colorado watershed is written the tragic story of land depletion by progressive attacks of logging, grazing and rain

There's a small precipitous watershed lying in the headwaters of the South Platte River, just behind the eastern ramparts of the Colorado Rockies, that has an eloquent story to tell. It is a story of waste and of the land sickness that is caused when an encroaching civilization fails to take care of its resources.

Once this watershed produced clear streams with shady pools and boulder-lined riffles. Now its sand-choked canyons send out only floods of muddy water as the land is slowly stripped of its life-producing topsoil.

This is only one small watershed, but there are many like it in the Front Range of the Rockies. And there are many like it throughout the nation—too many.

Most of the waste is caused by man's destructive activities such as excessive timber cutting, cultivation of erodible lands, excessive grazing practices and road building. Just a little care a few years ago could have averted losses that will take years to wipe out.

U. S. Forest Service

Trees have maintained a continuous but losing struggle to protect this watershed

Soil erosion has become so widespread that it often seems a natural occurrence. This is especially true in the arid West, where gulches and arroyos seem as much a part of the ordinary scene as the grassy rangeland, pine forests and mountain ranches.

This impression may be right in many places, for examples of normal soil loss such as the "bad lands" of semi-desert and desert areas are relatively common throughout the western states. But with encroaching civilization, the areas of active erosion have been rapidly extending into the more humid and normally well-vegetated regions.

Because this land disease is spreading it is extremely important that the people of the country learn to recognize its symptoms and get behind an active and aggressive campaign to stamp it out.

The South Platte watershed is typical of wide areas between the massive ridges of Pike's Peak and the table-flat summit of Long's. Like the others, this minor drainage is built on red, easily decomposed, Pike's Peak granite. Its shallow soil is clothed only by a scattered stand of stunted ponderosa pine. In some places rock outcrops break the smooth outline of the hillsides, and in others can be seen the traces of ancient trails—some deep-cut and running directly down the slopes, and some forming parallel, lightly outlined terraces. The gently sloping canyon bottom is formed by a wide, flat deposit of sand and silt, covered with a forest of thrifty young pine but broken along its center by the ragged slash of an enormous gully.

From any standpoint this area gives an initial impression of poor site quality. The short, crooked trees, shallow soil, and numerous bare and open places seem to indicate a natural lack of productivity. But closer inspection makes one suspect that the watershed is poorer than it used to be, because there are the familiar signs of past abuse and gradual decay.

The scanty grasses and weeds are low in vigor and small in size, while mountainmahogany and other shrubs

U. S. Forest Service

Torrents of muddy water cut ravines like this when the topsoil was carried off

have been browsed by cattle and wild game into shortened, distorted shapes. Here and there on the hillsides stand the pitchy stumps of trees cut during the last decade or so, each surrounded by an oval area of litter and the decomposing remnants of logging slash. Scattered among these are the gray and weathered stumps of other, larger trees. No litter or slash surrounds these stumps. Their roots lie fully exposed on top of the raw, red ground, showing that half a foot or more of soil must have been washed away since these trees were cut—over half a million cubic yards from each square mile of watershed. Now almost all the organic matter and topsoil are gone, leaving for a future forest only the subsoil and the parent rock.

A walk down into the canyon reveals still more clearly the picture of watershed deterioration. On the walls of the wide gully which drains its floor, partly hidden by sloping piles of sand and gravel, are the traces left by many storms, each of which has left its record in a well-marked, shallow stratum of sediment. Once buried in the earlier layers, but now exposed by the deepened gully, is a crumbling tree trunk, still standing erect, with shreds of bark hanging on its rotted surface. Perhaps a century ago this may have been an old, but still majestic Douglasfir, spreading its branches over the V-shaped bottom of the canyon.

On top of the thinly bedded silt deposits can be seen a layer of spreading feeder roots hanging out of the gully wall. These belong to the present canyon stand of ponderosa pine—a forest about 85 years old, its roots covered with a rich accumulation of organic humus and litter two inches or more in thickness. But above the litter is another layer of sediment, coarse in grain and almost two feet thick. Then comes another, thinner layer of roots and litter, and then still another deposit of sediment. On top of this most recent alluvium is only a thinly sprinkled mat of litter, with occasional weeds and grasses climbing out of the gravelly surface. A little farther down the gully is found one tree with five distinct systems of feeder roots, each covered with a foot or so of silt.

Once buried in the earlier layers of sand and gravel, this tree trunk still stands

By means of these manifestations, the watershed has tried to tell the story of how it must have been before the earliest loggers and livestock entered this country; how it has been depleted by the progressive attacks of logging, grazing and repeated rains; and how the forest has maintained a continuous but losing struggle to protect and revegetate the land. Here is the story, as nearly as it can be reconstructed now:

A century ago the watershed was covered with a virgin forest of pine and fir, fairly open on the drier southerly slopes but dense on cooler sites, and dominated by trees of imposing age and size. Below their canopy, the ground was largely covered with forest litter and humus, intermixed with a sparse but vigorous stand of bunchgrass and occasional shrubs. In the deep, narrow canyon bottom ran a small, clear, perennial stream, shaded almost throughout its length by Douglasfir and spruce.

Then came the loggers of the mining days around the 1870's, when almost every Front Range valley was invaded in search of lumber, railroad ties and mine props, and fuelwood for the mining camps and towns. During their generation, they cut out a large part of the forest, leaving behind a network of eroding skid trails on all the hillsides. They were followed by other timber cutters and by livestock until all the merchantable timber and most of the grass were gone, leaving only stunted trees to start the future forest.

With the vegetation so depleted, the soil's capacity to take in water went down and down. Water from heavy rains began to run over the watershed

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FOREST RIDDLE of NEW YORK

By HENRY S. KERNAN

Back in the seventeenth century, when there was a wall on Wall Street and pines on Pine Street, when there were farmers on the Bowery and a wind-driven sawmill squeaked and groaned on Governor's Island, Peter Stuyvesant stamped his wooden leg in rage because his beloved New Netherlands was traded for some sugar farms in Guiana.

The choleric governor's objections, however, were based upon pride rather than real estate values. He must have suspected that the canny Hollanders did well to cash in on their investment of $24 and give up what they could not keep in any case. They could not have known that Manhattan was to become the world capital, and that New York was to become foremost in the roll of states—a position due to a happy union of geography, transportation, and natural resources.

New York is a wealthy and industrial state. Over $33,000,000 have been earmarked by her Planning Commission for conservation; and the yearly forestry budget runs over $1,000,000. Obviously her problems and policies are radically different from those of most other states. Least of all can the products of her woodlands be measured solely in terms of sawlogs and pulpwood.

The situation is indeed puzzling. The state supports an excellent College of Forestry at Syracuse, with current enrollment of over 700 students; yet scarcely a dozen foresters are privately employed in woods work within New York state boundaries. The people own nearly three million acres of forest land; yet the only wood products harvested therefrom are Christmas trees. Large state nurseries have distributed over 640 million trees since 1900; yet there are thousands of plantations stagnating and deteriorating for lack of pruning and thinning. Foresters have been preaching and proving intensive management in the Adirondacks for over 50 years, but only one industrial firm has put its message into the woods on a large and permanent scale.

For one thing, there are really two New Yorks. One is metropolitan—world capital and giddy with the roar of the twentieth century. Here live over half of the state's citizens, and they extend their influence as far as they can travel over a weekend. Their attitude regarding the forest is likely to be sentimental, romantic, and usually uncritical.

The other New York is the rural "up-state," a term referring to all the land fanning out north and west from the crowded corner thrust down between New Jersey and Connecticut. The speech, the folklore, and the politics of up-state New Yorkers are independent of the city, which the countryman regards with a mixture of pride and suspicion. In contrast to the urbanite, he thinks of the woods as a part of his equipment for making a living.

Upon this dichotomy of culture are based the policies of the Conservation Department in Albany, of which the Division of Lands and Forests is a part. Among various other duties, including a highly successful system of fire control, this division carries on three forestry activities which, for originality and expenditure, place New York in the front rank.

But first a word regarding geography. New York is shaped like a boot with New England the backstay and the top bounded by Canada. The counties along the Pennsylvania line form the "southern tier," and are part of the Alleghany plateau. Northern New York is dominated by the Adirondack Mountains, which at one time, were islands in a long-forgotten sea. They include between 5,000 and 6,000 heavily wooded square miles of rivers, lakes, and mountains whose highest peaks are over 5,000 feet in elevation. Other ranges have more spectacular scenery and greater expanse; but none gives such a sense of wildness and mystery as billow after billow rises and drops off toward the cloudy horizon. Surrounded by the highways, towns and industries of a prosperous and busy people, they have retained an insular quality and remain the nearest thing to a real wilderness that can be found in the Northeast.

The people of New York own 3,000,000 acres of forest land —yet the only wood products harvested are Christmas trees

However, the real key to New York's geography is a magnificent system of waterways. Rivers with names like symphonies wind into the hinterland—the Susquehanna, the Alleghany, the Chenango, the Oswegatchee, the Ausable, and the Raquette. The Mohawk early assured trade with the Great Lakes, and the Hudson forms one of the world's best harbors. These rivers had an influence upon history long before Verrazano appeared off Sandy Hook in 1524. From their fertile plateau the Iroquois Indians raided in every direction. As a result war or peace was usually decided at campfires in the heart of what the palefaces were later to call the Empire State.

New York is the largest of the northeastern states, with 30.6 million acres. Of this acreage 13.5 is forested. The condition of these forests varies all the way from excellent to hopeless, with perhaps a third in sawlog stands. Generally they are understocked and overcut, with a mixture of species more heavily weighted toward low-grade and fast-growing hardwoods than was the case in the primeval forest. At the rate of about 16,000 acres a year, they are spreading over old farmland and burns. Probably the forest will eventually reach a stabilized area of about 18 million acres.

Most of New York falls within the northern hardwood type, and over half the volume is made up of such species as birch, beech and maple. Minor types are the oak of the lower Hudson Valley, the spruce and fir of the Adirondacks, and the white pine of the Lake George-Lake Champlain area. Although a definitive study of New York's forests has yet to be made, the commercial volume is presumed to be about 25 billion board feet, 72 percent of it hardwood. The hardwoods are growing about twice as fast as they are being cut and give a favorable growth-drain ratio to the state as a whole. The softwoods are losing ground each year.

This trend in favor of hardwoods has been going on since the earliest days. New York's lumber industry got off to an early start along her many rivers and lakes; and the zenith was reached before the Civil War. It was an industry based solely upon the white pine. The cutting, hauling, and driving of these trees alone supported the paraphernalia of the lumber camp and the river drive. This is hard to believe as one thinks of the branched and crooked white pines so common throughout the state today. They can give but little idea of their giant ancestors which dominated the primeval forest with boles six feet through and tops 200 feet above the ground.

New York's enlarged "rural slums" reforestation program is the most ambitious of its kind ever attempted by any state

Nor do the old lumber towns throughout the state have much left to remind the visitor that they were once built on sawdust. Saugerties, Aldrich, Tupper Lake, Forestport and dozens more have become market towns and vacation towns, or have sunk into obscurity. Only a few stumps are left, and still fewer old-timers who can remember when streams from the Ausable to the Alleghany were choked with logs.

While the pine was being cleared off, no one objected. The pines were there. They were needed and were used. Being highly selective, the logging did not greatly modify the forest cover as such. But during the latter half of the nineteenth century the industry changed. Hardwoods were cut for charcoal and mine props. Hemlocks were stripped for tanbark and left to decay. Spruce and fir of all sizes were cut for pulpwood. The evils of deforestation rapidly assumed the proportions of a public scandal.

As a direct result of fires and inexcusably destructive logging, a commission was established in 1885 to manage state forests, to control fire, and to encourage forestry on private woodlands. About the same time agitation began for an Adirondack and a Catskill forest preserve. Although the original idea was timber management, legislation soon took a different turn; and in 1895 the much admired and much hated Article VII, Section 7, was written into the state constitution.

No single fact is so important in New York's conservation policy as the existence of these preserves.

They consist of the state land (about half the area) within the "blue lines" designating the Adirondack and Catskill parks. On them no trees may be cut, sold, or destroyed. Camping permits are granted and enough trails are built to insure fire protection, but commercial development of any kind is excluded. Dams are barred, mining is barred, lumbering is barred. In short, preserves are and presumably always will be maintained as wild forest land. Some parts of the preserves are covered with primeval forest but the greater portion was once lumbered and has since reverted to the state by purchase or tax delinquency. The Adirondack Preserve now contains 2,165,000 acres, and the Catskill Preserve contains 232,000 acres. No land is currently being acquired within the "blue lines." Private lands within the parks are of course unaffected by Article VII Section 7.

In discussing this knotty question one is, to use a borrowed metaphor, treading on ashes over red hot coals. The slightest slip provokes furious rebuttal. It is some comfort to reflect that the Adirondacks have long been an empty battleground. Few Iroquois or Algonquins lived in these dense and chilly wilds, and those that did were derisively called Hatirongtaks (wood-eaters). But each tribe was

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KNOWING YOUR TREES

POST OAK

Quercus stellata Wang.

By WARREN D. BRUSH

S. L. Frost

Post oak grows naturally throughout nearly all the eastern United States except the Lake States, New York, and northern New England, and eastern Florida. Its range is included in the area from Cape Cod, Massachusetts, west through northern Ohio to southern Iowa, southwest to west central Texas, east to northern Florida and northeast to the coast of North Carolina.

For the most part, the tree occurs on poor, dry, gravelly or sandy upland soils, and on rocky ridges, being associated in the "barrens" or in sand-plane country with black, blackjack and scrub oaks, pitch pine and eastern redcedar. In the southern Appalachian Mountains post oak grows at altitudes up to 2,500 feet. It attains its largest size and best quality on the higher bottomlands of the lower Mississippi Valley. Because the trees in this location differ so greatly in size and form from those on the drier locations of the same general region, they were described at one time as a separate species, *mississippiensis*. The usual associates of this bottomland form include swamp chestnut oak, white oak, willow oak, water oak, sweetgum, elm, ash, hickory and occasionally loblolly pine.

Post oak is the common oak of central Texas on limestone hills and sandy plains. In the northern part of its range, from southern New England to Kansas, it is rather rare and inclined to be shrubby. It is of comparatively frequent occurrence from the coast of the South Atlantic and the Eastern Gulf states to the lower slopes of the Appalachian Mountains.

Although usually a medium-size tree not more than 50 or 60 feet tall and from one to two feet in diameter, it sometimes reaches a height of 100 feet and a diameter of three feet. The stout spreading branches, which are characteristically gnarled or somewhat twisted, form a broad, dense, round-topped head. The twigs are covered with yellowish brown matted, woolly hairs and the buds have chestnut brown hairy scales, coated toward the margins with scattered pale hairs.

The thick, somewhat leathery leaves, four to six inches long and three to four inches wide, are five-lobed. The two middle lobes, usually the largest and opposite each other, give the leaves a more or less cruciform ap-

S. L. Frost

Stout, gnarled branches of the Post Oak form a broad, dense, round-topped head. On open-grown trees the trunk may be short and limby

pearance. They are dark green on the upper surface, which is roughened by scattered pale hairs. The under surface is covered with short soft hairs which may be gray, light yellow, or rarely, silvery white.

In the spring when the new leaves are only partly grown, the staminate pollen-bearing catkins appear along with the pistillate acorn-producing flowers which are borne on the same tree, frequently on the same branch.

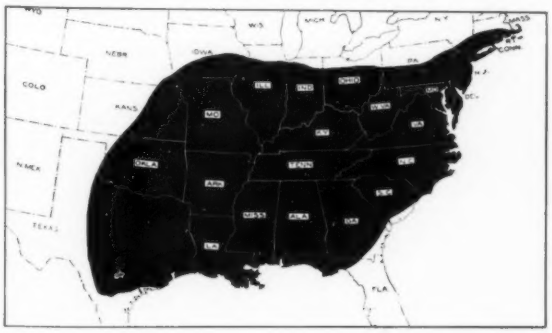
The acorns, which measure from one-half to three-fourths of an inch long, mature in September and October of the first year. They are sometimes covered with fine soft hairs at the tip and at times have dark, longitudinal stripes. They occur singly or in pairs and the nut is enclosed for one-third to one-half its length in a bowl-shaped cup attached to the twig or on a very short stem. The cup is covered by thin reddish brown scales, those toward the rim of the cup having long pale hairs.

The reddish brown bark, one-half to one inch thick, is divided by deep fissures into broad ridges and is covered on the surface with narrow, closely appressed, or rarely, loose scales.

While post oak produces some acorns every year, abundant crops are borne every two or three years. They are a favorite food of the wild turkey as well as other birds and mammals, particularly the squirrel whose activity in burying the nuts facilitates the dispersal and propagation of the species.

The total stand of post oak of sawtimber size is estimated at 5,000,000,000 board feet, which is about 13 percent of the total stand of all species of the white oak group. Unfortunately, much of the standing timber is not suitable for conversion into lumber because the trunk of post oak is inclined to be short and limby. Moreover, the trunk is frequently attacked by borers which render many trees unfit for lumber. To a large extent, the trees are converted into railway ties and construction timbers. A cubic foot of the air-dry wood weighs approximately 47 pounds, only one pound less than the weight of white oak.

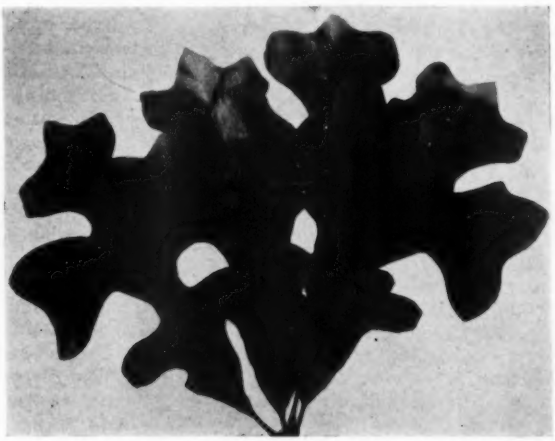
Acorns occur singly or in pairs, close to the twig



Common on poor soils throughout the East, the Post Oak makes its best growth in the lower Mississippi Valley bottomlands

Texas Forest Service

When the leaves are partly grown, long pollen-bearing catkins and short acorn-producing flowers appear on the same tree



L. W. Brownell

The thick, somewhat leathery leaves are dark green and rough on the upper surface and covered with soft hairs beneath

U. S. Forest Service

Reddish brown bark, one half to one inch thick, is divided by deep fissures into broad ridges covered with narrow scales

CONSERVATION TIMBER LEASE

By IRVINE H. RUTLEDGE

An idea worth trying — it protects the interests of forest owner and operator

THERE are hundreds and thousands of people of modest means who, especially in the South, own a few hundred, or a thousand, acres of young timber. They pay taxes on their land with the hope that their children will, if the timber doesn't burn, realize a few thousand dollars profit. At the same time lumber companies and paper companies are badly if not desperately in need of timber, but under the present outmoded contracts the owner is often poorly recompensed, the lumber and paper companies are not getting sufficient timber and the forests become thinner and poorer every year.

This article suggests a new and untried type of timber lease that will accomplish three purposes: first, it will give the owner a steady yearly income; second, it will provide more timber to the lumber and paper companies; and third, it will conserve and tend to build up our forests, and increase our timber production.

The idea is simply this: let us say that John Cypress owns a thousand acres of longleaf pine timber; he won't sell it because it's the old family place, but it has been rather badly cutover and burned in the past and he has only a good growth of 20-year-old trees. They are too small to cut and he faces the bleak prospect of paying taxes for many years before reaping any benefits.

Now let's suppose there is a large lumber or paper company close by that has a tremendous investment in its plant and needs timber to protect this investment. Let's suppose there is a progressive young manager with imagination and foresight named Jim Hemlock who goes to John Cypress and says, "We want to lease your timber rights and want to enter into an agreement that will benefit both you and us."

John is skeptical. His daddy always told him timber men "was no durn good."

But Jim goes on to describe his plan: a survey of the land will be made, and the state forester will estimate the volume of timber presently on the place. Let's say that John and the manager agree that $30 an acre would be a fair value.

John's total capital value is $30,000. With any kind of protection this investment should increase at the rate of 10 percent a year. But what John needs and wants is a steady yearly income, not a starvation period for 20 years while he's paying taxes.

Jim does some fast mental calculating. The lease in mind will have to run long enough to allow the company time to build up the production of timber and reap the benefits of the increased production for a reasonable length of time. The company can protect and manage this tract economically, not as an individual tract, but as one small unit of a considerably larger area. (Jim plans to lease 40 to 50 thousand acres under similar leases.) And finally, the company can afford to pay a bit more for timber under such a lease than it pays for pulpwood or logs in the open market because the company can sell the cream of the timber for poles and pilings and use the commoner timber for lumber or pulp.

Jim lights his pipe and says, "John, these days five percent is a pretty good return; and five percent on $30,000 is $1,500 a year. How would you like to let us have your timber rights for $1,500 a year for 25 years."

John's eyes grow very wide. "That will pay taxes, keep me in modest means, and carry the whole place, and it's a wonderful offer except for one thing—at the end of 25 years I, or my son if I'm gone, may have only a thousand acres of stumps and not a single stick of timber."

John asks suspiciously, "What kind of a place will I have at the end of 25 years?"

Jim has already thought this one out. "We will return your place to you with as much timber on it as it has when we take it over, and if we don't, we'll pay you per 1,000 feet twice the current market price of timber at that time. We'll promise to pay you this price just to make sure we return to you as much timber as you have when the lease begins."

John seemed relieved, but not satisfied. "But one of the big reasons I hold on to the place is because of the deer, turkey and quail hunting; and if you are cutting in November and December, you might ruin the hunting."

"We can put it right in the contract that we will not cut in November and December, and will not come on your place at all during those months except to fight fire."

John remembered that his father had lost a small fortune in timber by having his contract assigned five times to ever increasingly irresponsible people. "Would the company agree that this lease would not be assignable?" he asked.

Jim nodded. "If you say so, we can put that provision in the contract. Our company expects to be here for the next hundred years and won't want to assign."

John's mind was made up when he spoke, "If you have the lease prepared, I'll sign it anytime."

And so the lease was signed, embodying the following provisions:

(1) Survey of land.
(2) Estimate of timber by state forester.
(3) Lease for 25 years at $1,500 a year.
(4) Provision against assignment.
(5) Provision against lessee's agents or employees coming on property in November or December except to fight fire.
(6) At end of 25 years, another estimate of timber by state forester.
(7) Payment by company at twice the market price for volume of timber calculated by subtracting estimate made at end of lease from estimate made at beginning.
(8) Provision for the company's having first option on renewal of the lease at the end of the 25-year period.

Possibly there remain many quirks to iron out of such a lease, but the writer feels that it would accomplish three most desirable results: first, in getting timber for the company at reasonable prices; second, in securing a yearly income to the owner; and lastly, in producing more timber and conserving our forests.

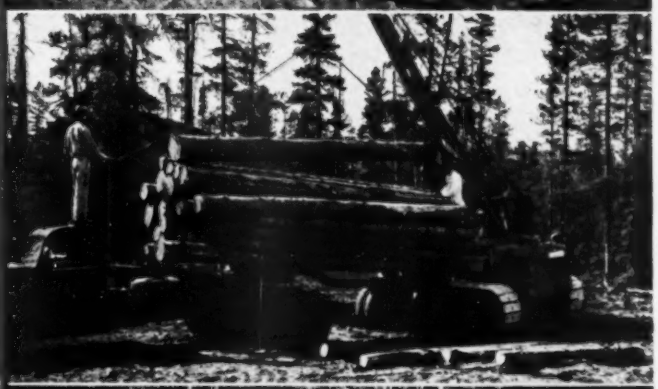
On the Continental Divide
It's an INTERNATIONAL *Show*

THEY SKID THE LOGS

On Rabbit Ears Range at 9500-ft. elevation, near the crest of the divide in Northwestern Colorado... that's where J. C. Johnson of Walden, Colo., uses International crawlers and power units in a clean-cut logging show.

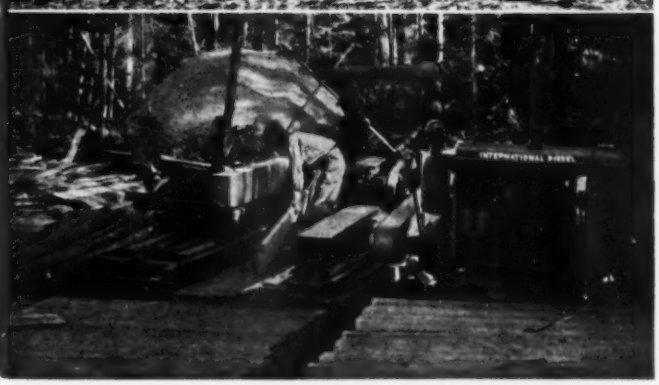
AND LOAD THEM

While TD-14 Diesels skid out the lodgepole pine, a TD-18 Diesel with revolving crane loads them on trucks for transport to the mill in Walden, 25 miles away. Twenty truckloads are delivered to this mill each day.



AND SAW THEM

At another location nearby, Johnson uses an International UD-14 Diesel engine to saw lodgepole logs into ties and lumber. Thus, this operation is International powered from start to finish—testimony to the superiority of International performance and operating economy.



INTERNATIONAL HARVESTER

For complete information about International industrial tractors with matched equipment and the power units or Diesel engines you require, see the International Industrial Distributor near you.

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managing your WOODLANDS

A page dedicated to the management of woodlands, large and small — practical suggestions in procedure and technique and in the solution of problems on the ground.

What is your problem? American Forests will assist you in finding an answer. Address queries to The Woodlands Editor.

HOW TO GROW A SHELTERBELT

A successful farmstead planter tells how it was done and passes on advice to others who need tree protection

IN 1940, the Prairie States Forestry Project established a three-eighths mile long farmstead planting on the A. T. Heinig farm in Sedgwick County, Kansas. Mr. Heinig gave the trees excellent care and obtained 100 percent survival. An essential feature of his pre-planting preparation was subsoiling the rows to a depth of 20 to 24 inches.

Mr. Heinig is mighty proud of his own planting and cooperates closely with County Agricultural Agent Don Ingle in encouraging other farmers to establish similar ones.

The first row on the windward side is desert willow, pruned to keep the branches low. The second row is cedar, which with the third—Austrian pine — allows little wind movement near the ground. The fourth row is black walnut; the fifth, catalpa; the sixth, green ash; the seventh, honey locust; the eighth and ninth, Chinese elm; and the tenth, Russian olive. The rows are spaced eight feet apart. Weeds have found no harbor in this planting and the soil is kept in excellent tilth.

Mr. Heinig has drawn conclusions as to what he thinks would be an improvement for similar plantings. He would prefer a seven-row planting, allowing at least 12 feet between rows, so that the trees could be cultivated with the usual farm implements. He would use the original composition for the first three rows on the windward side. Thus he would again have desert willow in the first row, with a spacing of four or five feet in the row, and the second row cedar—spaced 12 feet in the row. The third row would be Austrian pine with the same spacing as the cedar.

The remaining rows — all hardwoods — would have a spacing of eight to ten feet between the trees. The fourth row would be catalpa, and the fifth row black walnut. The sixth row would be Chinese elm and the seventh, or last row, green ash. The catalpa and the Chinese elm, making up the fourth and sixth rows, are rather fast growing, and would provide quick protection. When the other trees are large enough to take over the protection job he would remove these two rows, harvesting the trees for posts and fuelwood. This would allow room for black walnut to develop into good windbreak trees and as sources of valuable lumber. His experience and observation lead him to believe this would be the ideal windbreak for his section of Kansas.

For field protection, Mr. Heinig thinks a three row planting would be adequate, the windward row being cedar, the leeward, a row of Austrian pine, with a row of fast-growing species such as cottonwood or Chinese elm in the middle. When the conifers are tall enough to provide field protection he would harvest the center row. In this way a minimum of ground would be taken up and his fields would receive protection.

A. M. Sowder

The owner shows Extension Forester Donald Duncan the results of a thinning which provided posts and poles for the farm

A Virginia Orchardist Finds More Than Apples on Trees

When Vernon W. Tomlinson purchased Hunting Creek Orchard at Big Island, Virginia, in 1946, he was interested only in acquiring the 70 acres of apple trees. The terms of the purchase were such, however, that along with the orchard Tomlinson had to buy 190 acres of abandoned fields and 200 acres of forest land. Even at that, he felt he was getting a rather good "buy" where the orchard was concerned.

Before entering the orcharding business, Tomlinson had been a dairy farmer, with little or no experience with forest products or the management of forest land. His timber tract, in fact his entire boundary, is surrounded by the Jefferson National Forest, so it was quite logical for Tomlinson to plan to cut all the timber and then sell the cutover land

(*Turn to page* 333)

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CONSERVATION IN CONGRESS

By A. G. Hall

The House Appropriations Committee reported out H.R. 3601, providing appropriations for the Department of Agriculture for the fiscal year ending June 30, 1948. The committee's recommendations of drastic cuts in many activities were approved by an overwhelming majority of the House on May 28.

For a discussion of several items affecting forestry see the editorial, "Gambling with a Great Resource," on page 295. The budget estimate for all Forest Service activities was $68,941,160, from which the bill pared $11,832,109, leaving the Forest Service with $15,150,160 less in 1948 than in 1947. Major reductions from the budget estimates, other than those mentioned in the editorial involved a $500,000 cut in funds for the general administration of the national forests, $100,000 from maintenance of improvements, $162,813 from wildlife management (thereby eliminating all funds for this activity), $182,296 from recreational-use management and $200,000 from forest management research. The House also reduced the proposed funds for forest road development by $2,500,000 and cut $6,000,000 from forest highways and $500,000 from the million-dollar land acquisition program.

Aside from these cuts, the Forest Service fared well in comparison with some other agricultural agencies. The full authorization of $9,000,000 for cooperative forest fire work under the Clarke-McNary Act was allowed, as was the budget estimate of $809,500 for farm and other forestry cooperation.

A cut of $32,000 made directly in general administrative expenses of the Washington office was made more serious by the language of the committee in making other cuts. For example, in eliminating the funds for wildlife management, the committee indicated that this activity should continue and be financed from other funds. Likewise in reducing the acquisition expenditures by half, it stipulated that the appropriated funds be spent only for payment of lands purchased and that any expenses incident to land purchase must be paid from general administrative funds.

Soil Conservation Service research funds were reduced from a budget estimate of $1,423,000 to $673,000, the committee expressing a belief that since a great many problems in soil conservation have been solved, the cut could be made without serious effect. A cut of $5,437,000 was made in the $43,437,000 requested for soil conservation operations, with the stipulation that no part of the cut be applied to the operation of conservation nurseries. The committee stated that there is now less need for advice and assistance to the soil conservation districts than there had been when the districts were first getting under way.

Except for the disallowing of the funds for research on diseases of young forests and plantings, the bill allows the full amount of the budget estimate of $440,000 for forest disease studies under the Bureau of Plant Industry. An increase of $350,000 above the 1947 figure for the National Arboretum for the purpose of acquiring land to round out the boundaries of the arboretum was approved.

The bill eliminates the allotments for Dutch elm disease control under the Bureau of Entomology and Plant Quarantine, except for $51,800 for work to determine action to be taken by cooperating agencies to protect elms in areas of general infection.

The budget had asked for $4,000,000 for white pine blister rust control, a $2,000,000 reduction from last year. The House made a further cut of $250,000 specifically from funds for project leadership by the Bureau of Entomology and Plant Quarantine, on the grounds that techniques in control of the disease have been rather fully developed and are known by cooperating agencies.

* * *

Hearings have been held on the bills, H.R. 2750 and 2751 to transfer certain lands in the Olympic National Park to the Olympic National Forest. Further hearings and action by the House Public Lands Committee have been postponed until a sub-committee can study the situation on the ground during the summer recess of Congress. S. 1240, introduced by Senator Cain of Washington is a companion measure to these bills.

The Douglas Bill, H.R. 2876, to establish the Franklin Delano Roosevelt National Redwood Memorial Forest in California has been opposed by the legislature of California. No action is contemplated on the bill in this session of the Congress.

Following hearings on the Blatnik Bill, H.R. 2642, to safeguard the roadless area in the Superior National Forest, no further action has been taken. It is expected that the House Committee on Agriculture will resume study of the bill after the summer recess.

Senator Robertson of Wyoming introduced S. 1367 on May 29 to amend the Taylor Grazing Act to provide that fees for grazing live stock on The Public Domain be on a non-profit-producing basis and that 15 percent of the fees collected be paid to the states. The present law gives the Secretary of the Interior authority to "establish reasonable fees" and provides for the payment of 50 percent of the fees to the states. This is a companion bill to H.R. 3249 introduced by Representative Barrett of Wyoming on May 13.

Senator Robertson also introduced S. 1386 on May 29 to increase the size of isolated or disconnected tracts or parcels of the public lands which may be sold from 760 acres to 1,520 acres and to give purchase preference rights to owners of contiguous tracts. This is a companion bill to H.R. 3414 introduced on May 12 by Representative Barrett of Wyoming.

Transfer to the National Park Service of the administration of the recreational uses of lands and water within reclamation, flood control, power and other federal reservoir projects would be provided by S. 1362 introduced on May 29 by Senator Thomas of Oklahoma.

S. 597, providing cooperation of the federal government with state and private landowners in the control of forest insects, introduced by Senator Bushfield of South Dakota was passed by the Senate on May 22 and by the House on June 16, in lieu of H.R. 1974.

Hearings have been held by the House Committee on Agriculture on the Capper Bill to amend the Plant Quarantine Act to limit importations of nursery stock and provide for its more rigid inspection. As the bill, S. 338, passed the Senate a provision for application of the amendment to lily bulbs was added. This limitation appeared to be the main point of opposition in the hearings. Most of the favorable testimony was for the bill as originally introduced.

H.R. 3537 introduced by Representative Peterson of Florida on May 20 would authorize payments to the states of 25 percent of all revenues received from collection of fees from visitors to areas under the jurisdiction of the National Park Service.

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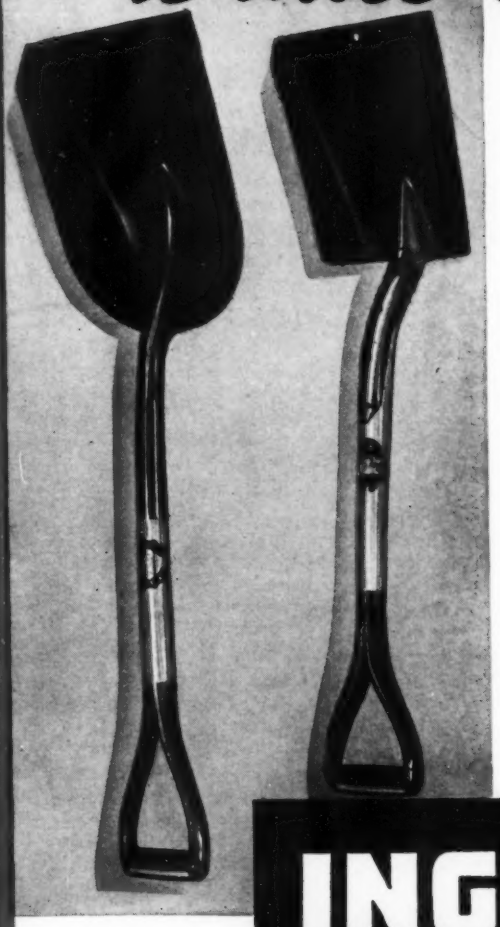

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AFA PROGRAM ENDORSED BY FORESTERS AND LUMBERMEN

The American Forestry Association's Program for American Forestry was endorsed in mid-July by the Association of State Foresters, meeting in Yosemite National Park, California, and by the American Lumber Congress, held at Chicago. These endorsements followed closely action by the Council of the Society of American Foresters in approving the program by resolution.

Terming the program "far reaching" and "designed to bring about better appreciation on the part of the public of the importance of forestry," the Association of State Foresters, by resolution, pledged "support of the principles of the program, and endorses the idea of the organization of an American Forestry Council."

The Lumber Congress approved this resolution: "The American Forestry Association has offered a broad national program of forestry based upon education, private initiative and the adoption by the several states of such controls of cutting practice as they may individually deem necessary. There cannot be complete unanimity on every detail in such a comprehensive proposal, but in essential aims and procedures, the American Lumber Congress heartily endorses the AFA program as a chart for effective progress consistent with our free economy."

The Council of the Society of American Foresters supported the program "as a desirable general basis of progress," without committing itself as to all details. The Council authorized "the President of the Society of American Foresters to assure the American Forestry Association of our hearty cooperation in making the program effective, including the designation of a representative on the advisory council (American Forestry Council) if desired."

In presenting the program to the state foresters at Yosemite Park, W. S. Rosecrans, president of The American Forestry Association, brought out that its aims could be summarized along four general lines—(1) better protection of forest resources from fire, insects and disease; (2) better harvesting methods to assure regrowth of forests; (3) better utilization of forest products to reduce waste; and (4) restocking of denuded areas sufficient to balance growth against demand.

As a first step toward translating the program into action, he said the Association is making and will maintain a continuing inventory of "what is being done by public and private agencies and by forestry, conservation and allied organizations that contribute or can contribute to the effectuation of the program." This inventory, he declared, is a necessary prerequisite to guide the Association in all of its undertakings, as its program of action calls for "working through existing public and private agencies and associations."

The role of the state government in the program, Mr. Rosecrans said, should consist primarily of the development of action programs to cover protection, harvesting, utilization and restocking. "This should be a multiple use program and should be developed with very complete cooperation between the chief executive of the state, the state forester and other official agencies of the state directly or indirectly connected with forestry, timber owners and operators, the various users of forests, including those for recreation, fishing, hunting and grazing."

This state action program, he continued, "should be based upon a current and continuing appraisal of the forest resources of the state and upon the proper method for their improvement and management. Above all, the plan must be sold to the people of the state so that it will secure proper financing and support. When such a program is worked out and sold, the state legislature will be willing to pass the necessary laws regarding control of fire, insects and diseases, and the regulation of cutting practices. Also, such comprehensive planning and selling should secure the proper public and financial support necessary to carry out the program."

The American Forestry Association has felt that the state is the key to good forestry in the United States and that action at the grass roots is imperative, Mr. Rosecrans said.

Stressing that figures of forest use versus forest growth indicate time is important, both from the standpoint of having available a proper supply of forest products and from the standpoint of political action. Mr. Rosecrans said the states have a unique opportunity for service but the opportunity must be grasped and action must be taken.

Joseph F. Kaylor, assistant executive director of the American Forestry Association, told the state foresters the program as geared to their states depends in large measure upon them—that they were in a position to provide leadership and training to a great army of public-spirited citizens willing to do their part in "awakening a public consciousness of forests in every day life."

Mr. Kaylor reminded the foresters that The American Forestry Association is ready to assist in pointing up state programs, "not by any shot-in-the-arm methods but by long-range measures designed to give each and every state, which indicates a willingness to cooperate, the best program that money and effort can buy."

ELECTION OF ASSOCIATION OFFICERS FOR 1948

The By-Laws of The American Forestry Association provide for a Committee on Elections, selected by the Board of Directors, whose function shall be to nominate a candidate for each office to be filled at the next annual election of the Association. The next election by letter ballot will take place December 1, 1947. Officers to be elected are a President for 1 year, a Treasurer for 1 year, 5 Directors for terms of 3 years each, 1 Director for 1 year and 21 Honorary Vice-Presidents for 1 year terms.

The Committee on Elections would welcome receiving the name or names of persons which any member of the Association wishes to have considered for these offices.

In addition to such suggestions, nominations may be made by the membership in the form of a petition signed by not less than 25 members of the Association in good standing. In submitting suggested candidates or nominations to the Committee on Elections, members are urged to include qualifications of the individuals.

Suggestions for the Committee, as well as nominations by petition, should be addressed to the Committee on Elections, The American Forestry Association, 919 17th Street, N.W., Washington 6, D. C. Members are urged to make their suggestions not later than September 1, 1947, while petitions must be received on or before November 1, 1947.

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Demolition blocks are high explosives which detonate with a quick, shattering blast. Their effectiveness is more *than twice that of the average commercial dynamite* and 25% more than that of T.N.T. They are relatively safe to handle and stable to store. They are *less sensitive to shock and friction than dynamite,* and can be burned (in small quantities) without exploding. The four types of demolition blocks are detonated by special electric or non-electric blasting caps or by detonating cord (primacord).

DESCRIPTION AND PACKAGING

M-1 Chain Demolition Blocks consist of eight tetrytol blocks each measuring 2 x 2 x 11 inches and weighing 2½ lbs. The blocks have a tetryl booster pellet in each end and are cast onto a single length of detonating cord. Each block is enclosed in asphalt impregnated paper and the chain is packed in a cloth haversack equipped with carrying strap. Two chains are packed to a wooden box.

M-2 Demolition Blocks are individual blocks identical with M-1 but they have a booster pellet and threaded cap well in each end. The M-2 blocks are packed the same as the M-1.

M-3 Demolition Blocks are 2¼ lb. blocks of moldable plastic explosive of composition C-2 or C-3. Each block is wrapped in glazed paper and inclosed in a cardboard carton. Eight blocks are packed in a cloth haversack; two haversacks in a wooden box.

M-4 Demolition Blocks are ½ lb. blocks of the same composition as the M-3. These are packed 100 to a wooden box.

Prices, F. O. B. location, are as follows:

M-1—75 cents per chain of eight blocks (2½ lbs. each)
M-2—10 cents each per 2½ lb. block
M-3—10 cents each per 2¼ lb. block
M-4—3 cents each per ½ lb. block
Minimum Quantities—1,500 lbs.

This material is available for immediate sale and delivery to all classes of purchasers at the following War Assets Administration Regional Offices in the approximate quantities. Offers to purchase may be made at any WAA Customer Service Center or by letter, wire or personal visit to any of the Regional Offices listed. If your offer is written, mark your envelope "Offer to Purchase Demolition Blocks, A-127".

WAA OFFICE	M-1	M-2	M-3	M-4
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Chicago	716,720 lbs.	44,707 lbs.	—	—
Cincinnati	492,520 lbs.	1,056,250 lbs.	50,965 lbs.	—
Denver	2,731,130 lbs.	143,720 lbs.	643,964 lbs.	—
Grand Prairie	116,560 lbs.	45,772 lbs.	376,679 lbs.	—
Los Angeles	1,682,580 lbs.	870,500 lbs.	474,480 lbs.	—
Minneapolis	1,111,960 lbs.	1,664,320 lbs.	—	—
Nashville	194,440 lbs.	1,189,640 lbs.	804,093 lbs.	—
New York	202,165 lbs.	164,945 lbs.	610,636 lbs.	1,327 lbs.
Omaha	1,335,110 lbs.	278,930 lbs.	316,946 lbs.	—
Philadelphia	352,225 lbs.	384,845 lbs.	—	1,896 lbs.
Portland	582,260 lbs.	877,880 lbs.	—	—
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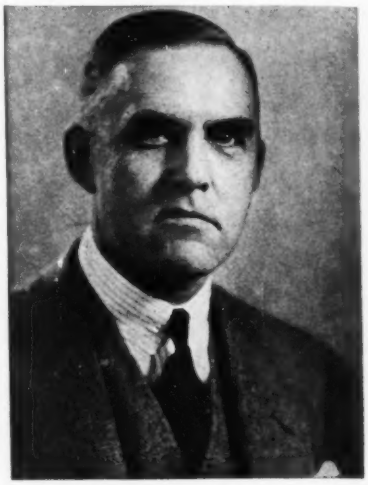
Fire Control Chief Dies in Air Crash

David P. Godwin, 58, Chief, Division of Fire Control, U. S. Forest Service, was one of 48 plane passengers who perished Friday, July 13, when a DC-4 Capital-Pennsylvania Central Airliner exploded against a rain-shrouded, thickly-wooded mountainside 14 miles to the northwest of Leesburg, Va. A well-known fire prevention and control expert, Godwin had pioneered in the Service's "smoke jumper" corps of parachutists and had been in charge of the helicopter-testing program.



David P. Godwin

Godwin was born in Virginia and joined the Forest Service several years before World War I. He served overseas 22 months with the First Division Engineers and graduated from the Army General Staff School and the Army School of the Line. After working for several years as labor relations adviser for a New York textile firm, he returned to the Forest Service as assistant chief, Division of Fire Control, and during World War II served as liaison man with the military services for all Forest Service activities. He was made Chief of the Division in 1946.

During the war, Godwin directed 200,000 volunteers in aircraft warning services and more than 100,000 troops in both plane spotting and fire fighting activities. He was chairman of the forest committee of the National Fire Prevention Association and senior member of the Society of American Foresters. On April 24 he was appointed representative of the American Forestry Association on the American Fire Medal Board and as such was scheduled to serve as chairman.

San Gorgonio Remains a Wilderness

THE San Gorgonio primitive area in the San Bernardino National Forest of southern California remains practically unchanged as the result of a decision announced by Lyle F. Watts, chief of the U. S. Forest Service, on a proposal that the boundaries of the area be modified to permit the installation of skiing facilities.

Following intensive study of the proposal, the Forest Service had come to the conclusion that the San Gorgonio primitive area has higher public value as a wilderness and a watershed than as a downhill skiing area.

The decision assumes national significance because opening of the San Gorgonio wilderness area might possibly have been cited later as a precedent for like action on other primitive areas in national forests and because months-long agitation for and against opening the California area to skiing installations aroused a number of country-wide organizations.

Mr. Watts also announced that as a result of re-study of the San Gorgonio area it had been decided to eliminate from it some 1,400 acres north of Poopout Hill in Barton Flats which already includes several structures and roads usable for automobiles and therefore is no longer suitable for primitive classification. Elimination of this acreage from primitive status, he explained, will permit a road to be built to the top of the hill and make it readily accessible for wilderness skiing and "ski touring" without affecting the rest of the wilderness area.

The San Gorgonio ruling, according to Mr. Watts, was made on the basis of testimony presented at a public hearing held last February 19 and 20 in San Francisco.

Mr. Watts said he fully appreciates the great public demand and need for additional downhill skiing areas in southern California.

The Forest Service chief said "I also recognize that San Gorgonio is an area well suited for a downhill skiing development. At the same time, were the area opened as proposed the loss of other public values would be greater than public gain through development for downhill skiing."

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Forestry's Seat by Sweden's Fireside

(*From page* 306)

agement, whether of the farmer, municipality, or industry, retains the prestige of national planning without sacrificing the true and tried virtues of decentralization in all points of detailed application. By now most Swedish forest owners recognize that their governing board is out to get for every man the best possible yield, which means the highest profit, and raises a barrier only at the mark where reproduction values are threatened.

Happily the forest fire plague which ravages such great areas of the United States and Canada appears a thing of the past throughout Scandinavia. Less than 10,000 acres from end to end of Sweden have been fireswept annually in the past six years, and rarely do more than 20,000 acres suffer. It is true that Sweden has been criss-crossing her woodlands for centuries with roads and trails, giving quick access to fire suppression crews. But the same path that carries your fire-fighter also carries the flame-throwing camper and smoker, and the explanation of fire immunity is thereby made simple: *the people don't start them.* They are indoctrinated with fire prevention in their home training, their elementary schools, youth organizations, and the daily habit of observing the dynamic partnership of forests with streams, factories, pay-lists, fuel, recreation, shipping, and numerous other advantages.

To compare Swedish or Norwegian forest protection equipment with any of the elaborate setups of an American or Canadian forest service, with their concentrations of expensive trucks, fire pumps, tools and permanent staffs, is a wasted exercise. And in the end the pennant must go to the Scandinavian. When you establish a fire prevention mentality in the minds and hearts of solid millions of folk, you don't need many feet of fire-hose to keep a nation's forests safe.

Walking one day through a Swedish woods in a heavily populated area, I said to the forest officer: "What's your experience with fires?"

He replied nonchalantly: "Nothing much. I've only been here 25 years."

Those readers more immediately interested in the forest resources as a social utility will recognize in Swedish practice how dominant is the national will toward continuity of the basic natural properties. The nation has little coal and no surplus of soil fertility. Long since, it changed over from an agricultural to an industrial economy, with the main foundations of industry set irrevocably in the productive power of timberlands plus waterpower, plus technical education of the workers. National survival and national pride have thus become the concomitants of an ever-renewing, ever-enriching forest estate. The Swedish people, by an uncommon exercise of self-discipline and a sort of collective shrewdness, suggesting their emergence from a pioneer exploitative mentality, have set up what may be called a "system" and have built themselves into it. The corner grocer is in it, and the labor leader and tram conductor. It is as if they wanted to announce to the world that there are some national possessions—forest, soils, waters, wildlife—deserving of a higher providence than the roulette wheel.

To the casual North American observer, it sometimes seems as if a "hidden hand" of state regimentation must account for Scandinavia's pattern of forest controls. Perhaps a more rational view would be that Scandinavia maintains enough free enterprise to keep every man on the *qui vive*, but also maintains enough public planning and benevolent control to assure the next generations of free enterprise. At all events Sweden, Norway and Finland, with one-fifth of Canada's forest area, manage to harvest a larger annual wood crop (substantially on a sustained-yield basis) than does Canada, which in one field alone turns out half the newsprint consumed the world over.

The much-talked-of "system" of Swedish forest culture will never be revealed through textbooks; or at least from any I have seen. The most luminous of all explanations came to me in conversations with two non-foresters. One was the president of the Swedish woods-workers' union, who made this statement: "Every worker knows that his wages will rise as we make the forests rise." The other was the head of the national Trades and Labour Congress, who said: "The forests are a public asset and if the public is to prosper a hundred years from now it will be through a prospering forest. Conservation is a guarantee of our bread and butter."

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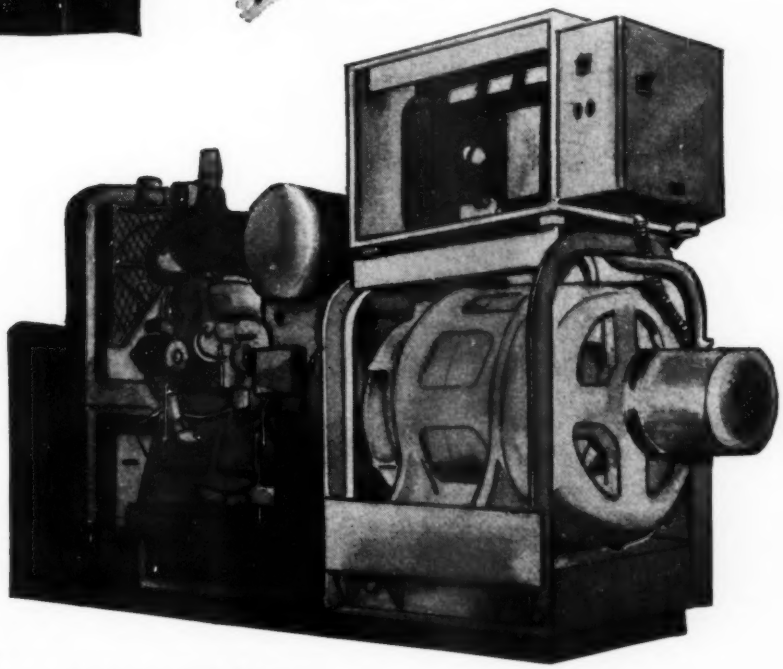

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Birch Beetle

(*From page 309*)

large areas and has probably added to the weakening of birch.

There is also the possibility of some disease being connected with the dying of the birch and this has led to a rather wide use of the term "die back" in Canada. This phase of the problem is receiving more detailed study.

Simply stated, the basic reason for such outbreaks is usually man's interference with the natural balance in nature. In order to correct conditions it is usually necessary to resort to artificial control measures until the natural balance can be restored. This holds true particularly in the case of a native insect such as is now killing the birch.

The bronze birch borer is a relatively small beetle, three-eighths inch long and one-eighth inch wide, dark olive brown to black above and slightly bronzed beneath. It is not commonly seen. After some feeding on the foliage it usually lays its eggs in the upper branches of the trees, although in the present epidemic eggs are often laid on the trunks—in groups of from three to ten in crevices of the bark. Upon hatching, the larvae, or grubs, tunnel through the bark and then begin girdling. These tunnels are at first very narrow but as the grubs grow they widen to one-eighth of an inch and are often three feet long. They zig-zag back and forth in a serpentine manner around the trunk, girdling and killing the trees by shutting off the flow of sap.

The question naturally arises as to what can be done to check the birch borer. The old Yankee phrase of "closing the door after the horse has escaped" too often holds true in our forest insect problems. However, there is much to be done in the prevention of future widespread outbreaks. The Maine hardwood industries are raising a fund to be matched by the state to start detailed studies into the causes of the present outbreak, including such phases as complete life history studies of the insect to find weak points that can best be attacked through spraying, forest management and cutting. These studies should bring out the reason why healthy trees are attacked by an insect which normally attacks only weakened ones. Studies are also planned to find the best means of bringing birch back on areas now covered by dead and dying stands. A study of parasites

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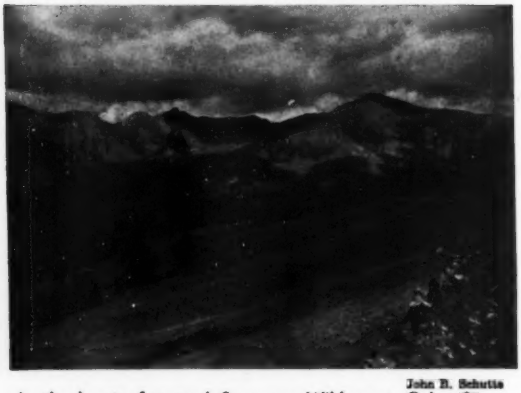

John B. Schutte
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and the use of airplane spraying are to be tried. As the program progresses it is planned to carry on an intensive educational program among birch owners and operators as to the best means of handling their stands to avoid further damage. A strong effort is to be made to protect young forests and stands not yet affected.

Studies to date show that pure stands of white birch, which are usually fairly even-aged, should be clean cut. Opening up of stands weakens the remaining trees and makes them very susceptible to borer injury. If thinning is necessary, it is best to take out only trees that will not materially affect the closed canopy of the stand. The same thing holds true when birch is mixed with other hardwoods—the birch must not be left in open stands.

Birch often grows in mixture with softwoods and if the softwoods are to be cut, plans should be made to cut the birch soon thereafter—at least within three years.

If borer damage is discovered, stands should be cut before 15 percent of the trees begin to show injury, so as to make possible reproduction through sprout growth.

There is a growing realization among foresters and timberland owners of the tremendous resource drains caused by insects, and long range programs are taking into consideration stronger protective and preventive measures. It has long been felt that many, if not most forest insect outbreaks, start from small beginnings, and that if these incipient outbreaks can be located in time the cost of controlling them will be small.

With this idea as a basis, Maine has had its forest fire wardens, and more lately forest insect rangers, on the lookout for new outbreaks. Insect traps scattered through the forested areas and inspection of remote areas from planes has added to the value of this work. With the Canadian provinces and other northeastern states entering into this program, the Northeast should be in a far stronger position to cut down insect losses. Forest insect rangers can do much to keep landowners informed of the condition of their lands and to help operators in locating areas that need cutting. It is hoped that the proposed program which is receiving strong support and offers of cooperation will lead to means of saving and perpetuating one of the most beautiful and useful trees in the world—the paper birch—and its close relative the yellow birch.

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Forest Riddle of New York

(*From page* 313)

violently and bloodily insistent that its own views prevail.

A similar situation exists today. One group of citizens in New York devotes its life to preventing any tree within the preserves from being cut, sold, or destroyed. Another segment believes that cutting is possible without affecting recreational value. This group points out that a stagnating forest in one place means an overcut forest in another.

Perhaps both sides have less at stake than they think. After all, the Adirondacks are not consistently a first-rate timber site. The hardwoods are often poor. The spruce, although excellent, grows slowly. On the other hand, if proper cutting were practiced, only a very small number of vacationists would ever notice the difference if it were not called to their attention. In any case, citizens will undoubtedly have another chance to express their collective will at the polls—which is an improvement over tomahawks and scalping.

Less controversial is the Enlarged Reforestation Program, the most ambitious of its kind ever attempted by any state. It stems from the discovery that New York has three to four million acres of rural slums—land whose tilling has broken the spirits and wasted the lives of countless families. This submarginal upland must be removed from agriculture and restored to forest by state action. Since 1929, 477,000 acres have been acquired in lots of not less than 500 acres, of which 216,000 have been planted. These state forests, being outside the "blue lines," are not restricted as are the preserves. They will be managed for timber as well as other benefits.

No forestry activity is so universally approved or so universally misunderstood as reforestation, so much so that foresters are popularly supposed to do nothing but plant trees, with an occasional day in a fire tower. The thrill of creating new forests, the beauty of evergreens, and the sense of accomplishment, all play a part in this sentiment. But plantations should be taken for what they are worth. A stand of conifers, even-aged and evenly spaced, is an artificial association subject to hazards impossible to foresee and often to control. Planting is the first step in salvaging land whose surface has been so eroded or so hardened that seed does not survive. Seldom, in New York state, is planting a practicable method of growing sawlogs.

The Enlarged Reforestation Program is commendable and should receive the support of every conservationist. But its effect on the timber supply will be negligible for years to come.

Although there are some large ownerships in the Adirondacks, New York is primarily a state of woodlots. Recognizing the problem of the small owner, the Legislature passed the Forest Cutting Practices Act in January, 1946. Under it, the state is divided into 15 districts. In each district a forestry board is appointed to draw up cutting standards to be applied voluntarily by landowners with the assistance of the district forester and his staff. Each local board sends a member to the state board, whose duties are to advise and propose. To date 12 local boards have been organized and 10 additional foresters have been employed.

A program of this type to aid small landowners is now thoroughly familiar to American foresters and is becoming better known by the general public. The fact that this program will be carried out under standards known to all and approved by the majority is simply good common law. Moreover, it is good economics to put the best effort on the best land, and this is what the Cutting Practices Act proposes to do.

Such selective effort is particularly important in New York where there are large areas which are poor sites for tree growth. The elm swamps along the St. Lawrence, the pitch pine flats west of Albany, and the bleak uplands of Tug Hill are examples. More familiar are the Hudson Highlands whose small trees were noted by the Swedish naturalist, Pehr Kalm, in 1750. These are cases for which man is not to blame. Planting programs and wilderness areas are luxuries that New York can well afford. But the high-grading and overcutting of her relatively small area of good, commercial forest need no longer be endured.

On the whole New York's policy has been one of extreme preservation on her own state lands and extreme neglect on all others. Now that the orgy of lumbering is over and her wood-using industries have either disappeared or are starving for wood, the time is ripe to reconsider. That there need be, generally, no conflict between timber production and management for other uses, has been well proved in Europe.

Whether New York will choose this course remains to be seen.

Managing Your Woodlands

(*From page* 318)

to the Forest Service. In that way, he'd reap the profit, if any, from the land and Uncle Sam could have the job of raising a new forest crop. So far as forest use for hunting was concerned—the Jefferson National Forest was in his own backyard.

With this thought in mind, Tomlinson went to a sawmill man for an appraisal of the timber and received an offer of $2,000 for the entire forest boundary. But he didn't stop there. The county agent suggested he visit the local farm forester, T. R. Elliott. Investigation of the stand by the forester showed, as it does for many Virginia stands, a large number of mature and over-mature trees, considerable damaged and defective ones, and a good amount of dead chestnut.

Together they marked the timber for a selective cutting to remove the old, dead and dying trees. On the 200 acres, a total volume of 674,464 board feet of mixed hardwoods, not including the chestnut, was selected to come out.

Now that he knew what his stand contained, Tomlinson went back to the sawmill man who had offered him the original $2,000. This time, the operator offered him $7,000 for the marked timber alone. But Tomlinson refused to sell.

Instead, he started to utilize the slack time of his three orchard laborers to salvage the dead chestnut. Sixty-two cords of chestnut were removed and delivered to Big Island, at $12.75 a cord. And 150 cords were sold "on the stump" for $3 a cord. He still has about 1,000 cords of chestnut to be harvested.

Crowding his orchard was an encroaching ring of tuliptrees, shading the apple trees. These he cut and sold for sawlogs and veneer logs at a gross return of $1,400. The lapwood or tops he peeled and sold for pulpwood—another $900.

So far, Tomlinson has realized a gross return of over $3,500 and he still has most of the 674,476 board feet of marked timber ready to cut. Now that Tomlinson realizes the value of his woods as a major supplement to his orchard income, the Jefferson National Forest has acquired a good neighbor and timber grower, which is more important than acquiring 200 acres of cutover land.

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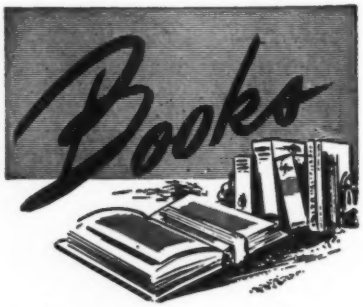

EXPLORING OUR NATIONAL PARKS, by Devereux Butcher, under the auspices of the National Parks Association, 1214 16th St., N. W., Wash. 6, D. C. Published by the Oxford University Press, New York City. 160 pages. Illus. Price $1.75.

This compact, informative geography of the 26 national primeval parks and the 38 national nature monuments provides a handy reference book for all outdoor lovers who gain relaxation and perspective by visits to wilderness areas. It should also prove useful to geography students as supplementary reading. The text is enhanced by 166 photographs, many of them by the author, that provide a pictorial description of the sweeping grandeur and striking contrasts presented by the various parks and monuments. A two-page map also adds to the book's attractiveness.

While the area described in this snug little geography comprises less than one percent of the United States, Alaska and Hawaii combined, the author states that contrary to popular belief, the establishment of parks and monuments does not necessarily make them safe for all time from the encroachments of special interests. Dangers to the parks presented by special interests for commercial utilization of park resources, establishment of artificial amusements and the inclusion of sub-standard areas, are very real, the author states, and call for continual vigilance on the part of the general public.

In this connection, a declaration of policy is presented by the National Parks Association. This statement of standards is prefaced by a brief comment by Newton B. Drury, director of the park service, and points out how the wilderness areas can and should be protected from all forms of exploitation.

THE PUMA—MYSTERIOUS AMERICAN CAT, by Stanley P. Young and Edward A. Goldman. Published by The American Wildlife Institute, Washington, D. C. 358 pages, illus. Price $4.00.

Bringing together in one volume and in orderly sequence the widely scattered literature on the puma or American "mountain lion," the authors, two senior biologists of the Fish and Wildlife Service, have developed a unique and fascinating book. It combines the thrilling experiences of hunters and settlers and a scientific study of the history, life habits, economic status and control of the puma. Concluding that the puma is essential in the scheme of nature, this study of the animal will be both interesting and valuable.

Shade Tree Service

(*From page* 298)

cational value to the public.

We need a network of cooperating arboreta covering all regions of our country if we are to provide a substantial proportion of our people with the educational advantages of an arboretum, and proving grounds for new and improved shade trees.

But an arboretum of a National Shade Tree Service must be more than a botanical garden of trees. The public must be presented with an outdoor museum, not merely a collection of trees and shrubs. Every effort should be made to develop arboretum techniques that will attract and hold the public interest and make exhibits mentally digestible and truly educational. Publications of a popular nature would be a part of this general educational effort.

A second aspect of education merges into the scientific program. There are literally hundreds of individual shade tree men who are being paid by the public for services and advice. A National Shade Tree Service could provide much needed information for these tree men and, in fact, for the whole landscape industry. How best to accomplish this will require considerable study and some "trial balloons." Publications in the twilight zone between the popular article and the scientific paper, short lecturer and demonstration courses, and correspondence courses all should be considered.

Do we need a shade tree service? To serve the public interest in trees—the interest of everyone who owns or enjoys shade trees—the answer is obvious. Tom, Dick and Harry do need a National Shade Tree Service!

"Fishing" for Deadheads

(*From page* 307)

expects to be pulling them out for several years if the market holds up.

Carl Olson found a treasure trove of logs at the Oxbow Bend on the Big Cedar River, scene of many jams in the old days when the Spalding Lumber Company and David Crawford drove logs to their mills.

Assisted by his son, George, and a hired man, Olson fished out 40 to 60 logs daily last season. There was some buoyant pine but most of the logs were the heavier hemlock, elm, maple, basswood and oak.

Olson uses a 21-foot flatboat which has two 16-foot crossbars, called "dogging planks," which are placed across the boat about five feet from each end. Hooks of "dogs," chained to the two planks, hold five logs on each side of the boat.

In fishing for deadheads, Olson probes the river bottom with a long pikepole. When a log is located, he rams the steel pointed pole into the timber and pulls it to the surface, then hooks it to the dogging plank by driving the "dog" spike into the wood. Olson said he has found four and five layers of logs buried in the silt and sand of the Big Cedar.

A complicating factor in salvage work has been the log marks used by long dead lumber companies. The marks, like cattle brands, were needed to determine ownership in the massed log drives. Companies retained ownership of sunken logs, and some salvage operators now must pay the heirs of the old lumbermen.

Olson paid $4 and then $8 a thousand board feet to David Crawford, Jr., of California, for the log mark rights on the Big Cedar River. Crawford's father operated a mill on the river a quarter century ago.

R. J. Burch of Summit City, Michigan, brought suit against two operators salvaging logs from the Manistee River. He claimed they were salvaging logs which he owned and not paying for them. His father, in 1930, paid $1,400 for the rights to 360 different marks, most of them once registered in the name of Louis Sands, a Scandinavian lumberman, who operated on the Manistee at the turn of the century.

R. Blanchard of Alpena, paid $5,000 to scattered heirs for the log rights on the Tahquamenon River, where he operated all last season. At a portable mill erected at Whitefish Bay, he sawed about 10,000 feet of lumber a day, selling it at $72 a thousand feet, run of mill. He had two crews working aboard small barges, equipped with simple winches to lift the logs, and paid the crews $1 a log no matter what the size.

In the early logging days in Michigan, log marks were merely cut into the bark with an ax, and were necessarily limited to simple designs. Many lumbermen then used the Muskegon River for driving logs to the sawmills, and it was not long before serious disputes arose over the similarity of bark marks. Cognizant of this problem, the Michigan legislature enacted a law requiring registering of log marks in the county where the logs were to be sawed into lumber.

Bark marks were found to be impractical eventually and in 1859 a law was passed requiring owners to mark the ends of logs to be floated down stream to the mills.

Richard M. Freye, an old-time river salvager, has a logging museum at his fishermen's bait stand on U. S. Highway 31, near Muskegon, where he has a collection of over 100 different log marks preserved on pieces of log ends.

"There are no large scale operations any more on the Muskegon," says Freye, "because there are simply not many logs left. Most of the logs recovered now are uncovered by eroding of the river banks, where they had been jammed up and sanded in

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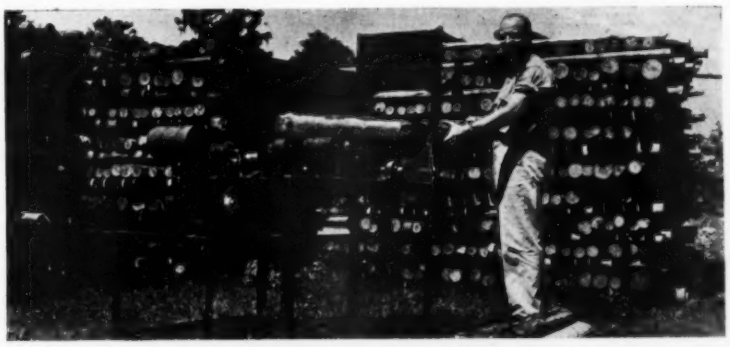

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since the lumbering days. Or they are buried in the bottom and are uncovered as the river bed changes."

Freye recalls that the first log lifting company was formed on the Muskegon shortly after the decline of lumbering. Millions of feet of logs were recovered from the river and Muskegon Lake.

Freye, in his salvaging operations, uses a 16-foot scow with an outboard motor. This gives the scow maneuverability and permits it to ride over the snags.

"The general procedure," says Freye, "is to cruise back and forth up the river until a log is spotted—then drive a harpoon into it, with a line attached. Take a couple of turns around the winch and draw the boat down, nearly to the scuffers, if necessary. If the log doesn't come up readily, just wait a few minutes. Usually, movement is preceded by a growing volume of bubbles. Often the logs will float after they have been pulled free of the bottom."

The oldest mark on a log salvaged by Freye was one registered in 1864 in Newaygo County. This find was made seven years ago. Most of the marks on retrieved logs were those registered in the 80's when lumbering was at its peak on the Muskegon and when hemlock and hardwoods were being cut.

Mountain Canyon

(*From page* 311)

surface instead of through the soil, taking with it large amounts of sediment. With each storm, the land became poorer and more soil was washed down, building layer after layer of silt in the canyon, and a part of it moving on to form a large fan of sand and gravel in the main channel of the South Platte. At the same time the stream produced less and less perennial flow, finally running only in the spring and for a short time after summer storms.

For many years after the mining days, the watershed was probably left alone by loggers, because the remaining trees were simply not worth taking; but livestock continued to cross and recross the area in search of forage. Roaming from one overgrazed valley across the hillsides to another, they helped compact the soil with their stamped-out trails and constantly kept down the vigor of the remaining grasses. During this comparatively quiet period, however, the thin forest stand kept growing until finally some trees were large enough to cut.

Then came the final blow. Once again loggers came onto the land, removing more trees, carving new skid trails down the slopes, and wearing a roadway into the flat alluvium which had piled up in the canyon. After that erosion was suddenly increased to a great degree. Each heavy storm brought down a new load of soil and sand, repeatedly burying the roots of the young forest that had grown up on the canyon floor. Finally, the most recent floods cut the present gully through these deep deposits, exposing all the roots and the layered sediments, and moving vast quantities of material down into the river.

This is only one small watershed, but there are many like it in the Front Range of the Rockies. Some day, with the protection and active care that are planned for them, they may be restored to something like their original condition. But it will require a time much longer than the generations during which they were laid waste, and a cost much greater than the profits from the timber and forage that were removed.

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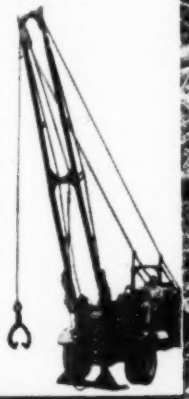

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